

# Adaptation and Motivation

An Environmental Model for Architectural Meaning

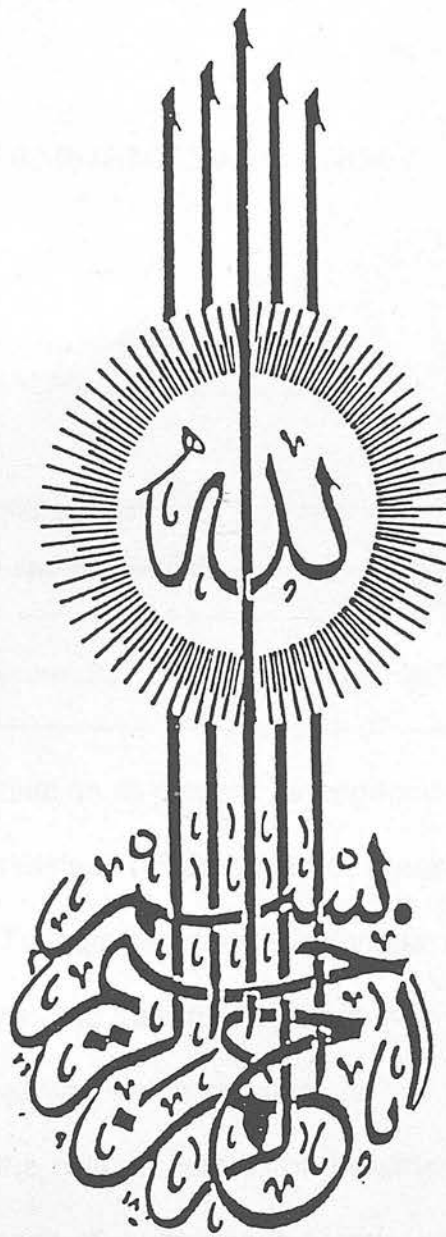
Thesis Submitted for  
the Degree of Ph.D in Architecture

By  
Masaud Abubaker Masaud

Heriot-Watt University  
Edinburgh College of Art  
Faculty of Environmental Studies  
Department of Architecture

Edinburgh, December 1996

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**IN THE NAME OF ALLAH,  
MOST GRACIOUS,  
MOST MERCIFUL**





Heriot-Watt University:

## POSTGRADUATE EXAMINATIONS

## 1. NAME

(a) Surname — MASAUD(b) Other Names — Masaud Abubaker

Registration No:

90/E53899

## 2. QUALIFICATION SOUGHT

(PhD/MSc/MPhil) — PhD in Architecture3. TITLE OF THESIS — Adaptation and MotivationDate — December 1996 — Signature \_\_\_\_\_

## Abstract

Most architectural theorisation at present, is engaged with concepts and views that are largely the expressions of some kind of "transient" epistemological and mental constructions. The typical design solutions emerging from such an approach would be dominated therefore by a visual and physical language that disconnects with the meaning which architecture has developed over time and which is embedded in the cultural context of the different societies. The thesis elaborates on an approach of understanding architectural phenomenon which relates it to its generative origins and the evolutionary processes of change and transformation. A model is developed which demonstrates the interrelationships between the natural environment and cultural systems. The aim is to explain the role of adaptation in building up a hierarchical links between the physical characteristic of a place and the higher cultural forms and values. The thesis has achieved this through correlating human motivations explained by Abraham Maslow with the different levels of adaptation. The reading made shows that architecture is a holistic phenomenon which has resulted from processes of

transformation and whose perception is contained in the semantic structure of language and the symbolic systems of culture in hand. The thesis concludes by the introduction of a framework consisting of a number of components which open up a basis for diachronic approach to theory of architecture. Several examples are selected for an analysis and interpretation to demonstrate the links which exist between the aesthetic qualities of these particular architectural phenomena and the basic needs and physical conditions. Although several of these examples have been chosen from the Middle Eastern area, the thesis argues for the universal application of the concept of adaptation in maintaining regional differences and cultural diversities that are also expressed in architectural forms and their aesthetic qualities.

#### NOTES

1. Three copies of the thesis, each with a copy of the Abstract (on this form or on plain A4 paper) bound into precede the thesis, must be lodged with the Deputy Registrar, Registration Office, together with a completed Submission of Thesis form and an additional copy of the Abstract on this form.
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## DECLARATION

### DECLARATION

This thesis is my original work and has been composed solely by myself.

M. A. Masaud

## DEDICATION

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This work is dedicated to the memory of my mother and father, whom I miss very much, to all my family particularly to my uncle Mohammed whom I owe very much for his generous support during my childhood. Finally I dedicate the thesis to my lovely wife and beloved children Nisrin, Fatima, Abubaker, Amer and my beautiful baby Hiba, who offered me much support throughout the period of preparing this thesis, and for the sacrifices they made in living for a long time far from home.



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# INTRODUCTION





## INTRODUCTION

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How did man settle in his territory? How did civilizations fulfil man's changing needs and satisfy them? How does man react to and transform his basic needs? Why are there different building forms in the various places and regions of the world? Why is there always a specific character for each place and certain identity for each region? And why is this character and identity specific for this place or this region only? And finally do these questions qualify an intellectual debate about the architecture of settlements in relation to man and his environment and his arising needs? While these needs can be considered as products of adaptive processes within a system which involves the collective conscious of people. The task of understanding these processes, their origins and their implications in architecture may require an individual intellectual intervention of a kind which talks of process and transformation rather than the mere description of architecture as a product. In other words we should be concerned with the underlying structure of evolution and adaptation should we want to talk of theory of architectural meaning. These questions and notions define briefly the task of this thesis.

Making simple analogies at the beginning may do no harm. In order to feel comfortable, man must maintain the temperature inside his body. Outside the body, heat loss can be controlled by clothing, posture, choice of location, and

activity. We have inherited a body of traditions to respond spontaneously and instinctually to many situations where adaptive reactions are expressed in a variety of forms and patterns. For example, thick clothing is worn when heat loss must be reduced and thinner clothes worn when heat losses must be increased. The insulating value of clothes can be adjusted by opening buttons, loosening collars etc. When cold we most appreciate the warmth of sun and try to avoid draughts, while hot we avoid the sun and the heated surfaces or take advantage of cooling breezes.

The idea of an adaptation process first came to my mind from reading Alexander's ideas of A Pattern Language (1977), and also his notion of The Timeless Way of Building (1979). I should admit that I was very impressed with these thoughts particularly the idea that patterns, which Alexander collected from various places, were seen as successful solutions achieved by people on the principle of trial and error. The idea prompted me to question the origin of these patterns and the process which led to their success and social acceptability. The initial conclusion was that most if not all of these patterns should have been the result of some sort of "good" adaptation to their environments which made them compatible with people's needs and aspirations. A thorough analysis of those patterns revealed a variety of aspects which were classified into **three interactive levels of adaptation which will be put forward by the thesis as its main hypothesis**. The first is concerned with adaptation to the physical conditions which is primarily for providing protection against physical forces and external pressures. It can be said here that considerations of physical conditions at an

early stage of the evolution of built form, may generate shared types in areas that share similar physical environmental conditions. The second level is concerned with social adaptation and how to live in a social group or society so as to have to adapt to the rules and norms which govern these societies. The third level is concerned with adaptation to cultural values which are expressed in perceptual and aesthetic experiences. The study will argue that, in further stages of both the social and cultural levels, solution types are adapted to specific cultural values. These shared types, however are modified in order to adapt them to life in a specific social group occupying a specific location. These levels of adaptation in architecture are expressed in a pattern which corresponds to the hierarchy of human needs as these maintain a certain order of priority and therefore can not have the same significance. The question of the relationship between levels of adaptation and the hierarchy of human motivations has opened up a task for a new inquiry which then became the core of this thesis.

The study has benefited from the valuable writing of Abraham Maslow, particularly his book on human motivations which he wrote in 1954 Motivation and Personality. Maslow suggested that human motivations are arranged in a hierarchal order as follows: (1) physiological needs, (2) safety needs, (3) belonging and love needs, (4) esteem needs, (5) self-actualization needs and (6) cognitive and aesthetic needs. This has prompted the study to explore the connection between these motivations as well as to find out how they impinge on architecture or the environment as a whole through the processes of adaptation and change. Man is motivated by those needs to take action to satisfy them in

a way which reflects a hierarchical order from the basic to the more abstract and these actions were reflected on the structure of the built environment, drawing in the same time its various aspects such as the social, cultural, economical, political and so on.

One of the most difficult tasks in architectural design is to identify the various needs of people or clients as many of them are very subjective and mostly expressed unconsciously through "unstated" preferences and desires. Clients are not always capable of expressing themselves. On the other hand people's real needs are suppressed due to the complex influences and information bombarding them in their every day life. Designers may be unaware of their shortcomings in dealing with this complex issue. As a result many of them would seek refuge in adopting the variety of options offered to them by the architectural styles in the form of fashions and schools of design which are largely verified by rhetoric and conceptualisation.

It is important to recognize that there is a dilemma here particularly when architectural solutions evoke a sense of anxiety for the loss of identity which is growing in many societies especially of the Third World countries. The result is a more complex picture of the nature of environmental design than that held by many of the designing professions at present. The adaptive view of design, introduced here, recognizes that different people have different values and thus different images of the good life and good environment. It also recognizes that different people have also different expectations as a result of their personal

experiences and ambitions.

Aside from those aspects which have direct influence on the built environment and human life, such as the economical and other physical factors characteristic of every day contemporary life, there are other intangible aspects behind this dilemma. These are more complex hence rather difficult to come to terms with. The terms "social and cultural" are becoming very popular in the environmental studies yet rather misunderstood or may be even abused. Many solutions which claim to be based on social and cultural criteria are conceptualised in terms related to visual observations of the social environment as it appears to the observer. An example of this is the social proximity of the Middle Eastern people living in compact towns. Such proximity was chosen because it reduces sun radiation in the street. Local materials also help in absorbing the sun's heat which would allow people to use the winding streets comfortably. Modern designers produce similar compact developments in the hope of maintaining the same social phenomenon but using different material such as concrete which reflects the heat and therefore inhibits people from using the outside spaces. The problem of course is more complex than this, because designers usually see and perceive the winding streets as they are without making an effort to know the reason and the process behind that complex pattern. They are only concerned with the final products, not the stages which led to these products and as a result many other interrelated important aspects are disturbed. The outcome is the accumulation of a deep anxiety expressed in different psychological forms. These particularly arise when people start to feel that there is something deep inside

them which is not satisfied or their desires are not fulfilled.

The problem can be identified when some cities started to fail to satisfy and cope with the needs of their inhabitants not only in terms of the physical needs but also the social and cultural ones. Although authorities, decision makers, city designers, planners, urban designers and other professionals are trying to satisfy human desires, the problems of the built environment are still increasing and becoming complicated and diversified. Why did the problem of the inner city increase? What are the reasons behind the failure of many modern housing projects? Why did people continue to suffer from dispersal within their neighbourhood? Why did the rate of suicide increase in many of the developed cities? Rapoport has referred to these problems in his statement:

*"in the case of cities the difficulty of defining what is a city is related to the use of different schemata and it is easy to show differences in the way cities are structured ... These differences - in location, definition of domains, the meaning given to various elements are all due to varying perceptions, cognition and evaluation of environmental quality, images, values and many socio-cultural variables all which need to be understood before differences in spacial organization can be fully understood."* (A. Rapoport, 1977, p.21).

The thesis's approach is to examine critically such interpretations of architecture

and urban design which are based on conceptualisations, abstract expressions and mental constructions of the kind which exist and which are practised widely today. Another aim is to introduce an understanding of architectural meaning as the expression of regularity embedded in the adaptive processes and responses to human hierarchical needs and motivations. To support this approach the study was driven to address aesthetics of architecture as abstraction distilled through the process of adaptation to concrete ecological forces and motivations starting from the very basic ones. It has also developed an argument which will draw a new insight into the origin of architectural aesthetics.

### **0. 1. The Main Argument:**

The study postulates that the social environment is the medium where the interpretation of the physical objects and features are transformed to become cultural and aesthetic values (Steward, J 1953 & Ujam, F 1987). In other words the step between the physical level and the abstraction of aesthetics lies in the social structure. Ujam argues that through social symbolism we communicate and derive abstract lessons and messages about the values of topography, natural resources etc.. These lessons then become a world view and philosophy of life. They become symbols in our cultural perception and our shared language. The study's approach is that architecture is the coping behaviour of the transformation of physical basic features into abstraction of aesthetics through the social media.

The thesis, beside establishing the link between the basic physical objects and



their aesthetic values, is also an attempt to broaden the designer's knowledge about these factors which have to be accommodated and reflected in design. The thesis however does not claim to solve problems. Instead it attempts to provide a concrete framework for understanding architecture through which appropriate solutions are possible.

The framework acknowledges that the various components of culture such as preferences, symbols, religious and ritual beliefs, historical forces and others are not arbitrarily connected. They are related in a structure which is the product of a conscious adaptation process with particular order which is responsible for the maintenance of culture and its various manifestations. This includes the phenomena of architecture and the built environment in their broad meaning. Such a framework obviously cannot be achieved through the collection of data or information from external resources. The kind of information needed for the framework is determined by and emerges from tracing the history of evolution of architectural phenomena in their particular contexts. It is important to state here that this framework is more concerned with defining the relations which tie together the various components rather than defining the components themselves only.

By identifying the relationship between these aspects it would also be possible to locate them in their appropriate positions as we have seen in the example of the compact towns of the arid areas. It is becoming possible also to broaden our knowledge of the environment as a holistic entity rather than seeing it as a



constellation of fragmented parts as is the case in some of the current architectural and urban design practices. When deciding a choice of materials, colours, patterns and forms such holistic understanding would make it possible to produce designs that reflect people's preferences and needs as these are contained in the structure of their thought. It follows that any feature such as colour for example has acquired its symbolic meaning from the place it is located in the structure of relationships rather than from its visual quality as a mere physical entity. An Arab appreciation of the Colour Green is determined by its religious and symbolic meaning being a signifier of greenery and vegetation which are lacking in the arid zones (F. Ujam, 1994). The use of colours beyond such a framework may at the long term lead to alienation and refusal. This is true for many other features.

The study does not deny the universal meaning and association of these features. The use of some colours has been in relation to a particular universal association such as for example red is associated with fire, green is with peace, blue with cold etc. Society develops myths and interpretations to every thing that has significance for its survival. At present there is a growing interest in studying sacred architecture as a means to understand how different cultures developed different languages in architecture through their myths and world views.

The thesis supports and argues for the investigation of human needs and motivations as conditioned by their cultural contexts. The study argues also that adaptation processes have produced interactive and interrelated aspects that can

be seen as responses to three hierarchical levels; physical , social and cultural-aesthetic environments. By carrying out a comparative analysis of both adaptation processes and the hierarchy of motivations according to Maslow, it was found that each level of adaptation responds to two of the human needs in the Motivation Model that he developed.

The study undertook the task to detect the origin of these processes and explore their implications in the architectural context of many sustainable cultures in different parts of the world. The study also suggests that in order to understand any built environment we have to understand the needs and perceptions of people through the way these are reflected in that environment i.e. the structure of the built environment is formulated as a result of adaptation guided by the hierarchy of human motivations. Cities can be defined according to their physical patterns and to the needs and adaptive behavioural patterns of their residents. The first task in design, therefore, is to understand the needs of a potential client; the architects must then study the interaction of these needs, and finally devise a mechanism which is as responsive to them as possible. Beauty may be a consequence of his activity, as well as being part of his principal aim of satisfying his higher needs of aesthetic and cognitive appreciation.

The aim of the model which the thesis introduces is to assert that any aesthetic quality attached to a design will be relevant and constructive therefore accepted by people as far as it is the outcome of a genuine processes of transforming and transcending the characteristics of all motivations starting from the basic.

Societies usually commemorate the significance of these characteristics in the form of abstract images through art, rituals, symbols and architecture. Examples of this are evident in the art of many vernacular and native cultures where the main motifs of the subjects of their art are natural features that are important in the life of these populations. This is the subjective language of sustainability that architecture should see as its essence and ultimate goal. The next immediate section elaborates further on the background of adaptation and motivation theories.

## **0. 2. Initial Postulates:**

As culture evolves as an abstraction of features, events and systems specific to a certain ecological setting, man ceases to respond to the set of the ecological environment in a primitive way. Instead he responds to the set of values, symbols and meanings which he abstracts from adapting himself to the characteristics of his place (F. Ujam, 1994). This is done in order to reduce the complexity of information coming from the environment. The new generation would therefore communicate with the environmental messages through these values and symbols. It is believed that features accompanied the evolution of culture will affect peoples preferences as well as their aesthetic perception and experiences. On the other hand sustainability is achieved through collective awareness of the available cultural resources both objective and subjective so that a state of compatibility is achieved which is evident in the social homogeneity and cultural traditions. At the lower level of survival and biological bases, man developed

certain patterns to achieve safety and to fulfil his basic needs in a compatible way with the environmental conditions. Man's needs and motivations are also seen to be conditioned by his awareness of the prevailing attributes of the physical environment. Therefore, his status within the community as well as his cultural, emotional and aesthetic experience and expectations will have their origins in man's adaptation to his ecological environment.

The study will adapt Maslow's Motivation Model to demonstrate that the links between the ecological environment and human motivations and needs can be a very useful tool to set practical measures for the compatibility of the built environment. It is significant to study the mechanism of adaptation in which these motivations are achieved. The aim is therefore, to find the links between the motivation and adaptation theories. This is to become more aware of the various aspects of human preferences and desires on more deep and concrete bases. To experience the cultural values or the aesthetic quality of a building means to experience the strong link between these qualities and their generative origins which lie in man's adaptation to the prime conditions in his setting.

Thus one may define the research task as the search for these cultural values because they are the abstraction of concrete knowledge and profound feelings people have in relation to their buildings and places. Designers and planners have to set a new vision in architecture and urbanism based on indigenous factors which underlie a design's type and quality and which have strong relation to the natural conditions in a place. This will avoid the trial and errors and their

expensive cost that many small cultures cannot afford now. The way to achieve this is by studying adaptation to nature and the way people shape and achieve their various needs and human motivations.

According to Maslow there are six motivations, the first two are more basic and relate to biological and physiological factors such as thirst, hunger, safety and protection. Others are less basic and may interpret human tendency towards abstraction and aesthetic qualities such as belonging, self-esteem, self-actualization, and cognitive and cultural perceptions. But the most important issue here is the way these two factors, the basic and cultural motivations are connected.

In other words when a person is in need of food or protection he is unlikely to give priority to experience higher needs related for example to artistic and aesthetic appreciation, but there are exceptions. Should he satisfy his immediate needs he will be motivated towards fulfilling the higher needs of sense of belonging, and self-esteem. Cognitive and more abstract motivations then become man's next goals. But what matters here is that while the hierarchy of human motivations have conditioned the processes of adaptation, cultural adaptation will then effect people's perceptions of the characteristic of each human needs in a holistic way. The meaning of what has been said is that our experience of the cultural and aesthetic values is the culmination of all adaptive processes to the physical and social environments and how this is demonstrated in the architectural forms, behaviours and other features.

The aim should be to create awareness of the principles behind architectural forms and patterns related to the place and its identity. This would be achieved through understanding the origins and the evolutions of these patterns in their adaptive processes to their environments and how they respond to human needs. This means to go beyond the phenomena and discover the process which lead to those patterns through a diachronic analysis. The intention of this study has been to investigate how successful architectural patterns occurred, rather than describing them synchronically as solely physical forms. The study, intends to provide awareness of those patterns and to apply the outcome findings to architecture through revealing the hidden dimensions and forces of human evolution.

In that architecture, art and craft all express the society's artistic achievements though created to suit particular and maybe different functions. They all indicate peoples capabilities to abstract values from a variety of resources in the form of art or aesthetic theme in architecture for example.

### **0. 3. The Organization of The Thesis:**

The following is a brief summary of the various chapters and the organisation of the thesis.

Chapter one discusses some aspects of concern held by the author and consequences of adopting what might be called the 'International Style', and its

effect on current architecture and built environments. This chapter also identifies various manifestations of architectural problems such as loss of identity, sense of belonging, fragmentation, segregation in the society and the role of people's participation.

Chapter two is an introduction to the theoretical framework by exploring the relationship between man, culture and environment. The chapter introduces an analysis of the different attitudes people have towards nature and how these attitudes effect the environment. A comparison between coping behaviour as basis of expressive behaviour and their relationships is introduced to enhance our understanding of diversity particularly in architecture.

Chapter three deals with the main argument upon which this study is based, this is the theory of adaptation processes with their three levels as a vehicle to approach the nature of architecture and the built environment. These three levels physical, social and cultural, will be presented in the following three chapters, in more detail. In this chapter there will be presentation of Maslow's Model of motivation and how the various motivations are linked to the three levels of adaptation.

Chapter four presents an environmental model based on adaptation processes and how these are interrelated and conditioned by human motivation forces. The first part of this chapter is intended to make an analogy between adaptations and motivations and to relate the three levels of adaptation to the hierarchy of human



needs. **Shelter** is a concept responding to physiological and safety needs while the concept of **Habitat** responds to belonging and love needs and self esteem. The third stage of cultural adaptation embodies the concept of **Genius Loci** which responds to self-equalization and cognitive needs. The second part of this chapter will introduce the components of the model, these are nature, resources, traditional built form, social behaviour and culture.

Chapter five aims to define the first level of adaptation i.e. the adaptation to physical environment. This is achieved by bringing examples from different parts of the world. There will be an elaboration on how the built environment produced by man responding to different climatic regions from the Arctic areas, Hot Dry Zones to the Tropical areas which demonstrated a successful answers to the extremes of climate and the general geographical conditions. An analysis of physical resources and building materials which responded effectively to the physical environment will also be presented. This chapter also discusses the theory of prototypes and its application in architecture in general.

Chapter six is a broad perspective of the second level of adaptation, i.e. adaptation to social environment. In the first part of this chapter the emphasis has been focused on the concept of behaviour, privacy, personal space, territorial behaviour, self therapy and personality. At the end of this chapter the study introduces the concept of community and sense of belonging with a special case study on the community within the Islamic society as a successful model of love and belonging needs. The case study introduces a discussion of the principle of

equality, sense of responsibility with reference to certain places in Islamic towns. The principle of Neither "Darar" Nor "Dirar" from the traditional (Hadith) of The Prophet Mohammed (Pbuh) embodies such strong notions which define a coherent community.

Exploration into the third level of adaptation i.e. adaptation to cultural environment, takes place in chapter seven. This is done by defining the concept of culture as a whole and what it means to many people. The following section introduces manifestations and components of culture which include cognition processes, perception, cognitive schemata, and aesthetic values. This is to find out how people recognize and perceive these values? and how the human mind works to produce sets of schematic codes and symbols?

Chapter eight presents the findings and supporting case studies of this thesis which include all lessons gained from this research. The case studies aim to investigate the settlement pattern which was achieved by the inclusion of two examples, the city of Edinburgh and the city of Tunis both represent different regions and cultures. A number of other short case studies and examples were also included. These were to study house layout, Mashrabiya window and column. The thesis ends with the concluding message of what the thesis is all about followed by some recommendations and areas of further research.

## CHAPTER ONE

# SOURCE OF CONCERN



# CHAPTER ONE

## SOURCE OF CONCERN

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### 1. 1. Introduction:

The aim of this chapter is to investigate into the sources of concerns that gave rise to the subject of the thesis. The author practised architecture and planning in the municipality of one of the Libyan towns as a head of building projects. The work involved decisions regarding choices of buildings types, their distribution and maintenance. Almost all these building designs were prepared and provided by the central planning administration. The local architects and planners both in the private sector and the municipality had no role in any of these choices. Many problems were arisen particularly by local people who have no knowledge, nor were they consulted on the suitability of these types of building to their physical and socio-cultural needs. There were obviously dramatic differences in almost every aspect between the houses people used to live in and those which were exported to the town.

The author's experience of these situations has lead to a variety of questions to be answered. The observation was that the choice of these building types were made on a rather superficial basis. The author was driven to believe that architecture has two strongly integrated aspects. The first is the conspicuous and

relates to what is observable in buildings. These may include facades, shapes of buildings, material, technology and so on. The second is the idea which underlies the visible phenomena. This idea could be the expression of a variety of forces, criteria and other features inherent in the context of the building. From the experience of confronting the problems in the municipality the author has come to the conclusion that building types should be confined to the underlying ideas and forces that pertain to people's perceptions and their social and cultural values. It could be argued that the characteristics of the final product can have varying kinds of effects on people. Certain types of building could be very supportive to people's lives and would lead to a sense of harmony and combatability. Others may cause a deep sense of disorientation and loss of identity. There is much evidence of such effects as confirmed by people living in the town. However, one may be critical to the way these building types have been introduced or imposed on people rather than blaming their designers. This does not deny that some architects for some reasons are not very aware of the broader cultural aspects that buildings have to reflect.

These and other more extended concerns have been expressed and confirmed by the many research students with whom the author works and whose topics emerged generally from similar situation in their own countries. The author became strongly motivated to tackle this issue as the subject of this Ph.D thesis. The exchange of opinions and experiences, however, has contributed substantially to many ideas and thoughts that the thesis contains. It was thought that before embarking on the main work, it would be useful to review the



backgrounds of some of the author's concerns so that the main arguments would seem to emerge naturally from that background. It is important to mention here that the intention has never been to make critical statements about how architecture is practised now whether in Libya or any other place. Rather it was decided to express concerns about particular aspects which would then be discussed in the thesis within its theoretical framework.

On top of these concerns is the issue of expression in architecture. The study argues for two different types of expression, one which pertains to the overall holistic social and cultural environment. The expression in architecture of cultural values is understood and shared by the community as a whole. Architecture is appreciated for its role in confirming the cultural achievements of its society. Buildings can be seen as mirrors reflecting the symbolic values needed for the continuity and evolution of cultures. It is this precise approach to expression that the thesis intends to study and confirm as a framework within which designing for the different cultures has to consider.

On the other hand there is the expression of personal ideas and interpretations in architecture. By personal expression we mean that which reflects an individual designer's obsession for example with a particular idea or certain feelings that are not familiar within its cultural context. This type of expression is evident, for example in designs that are dominated by strong visual themes particularly when the form of building does not respond to the prevailing environmental conditions or does not reflect the culture of the place. In this regard one may refer to Le

Corbusier's statement *"I propose one single building for all nations and all climates"* Le Corbusier (1923) quoted by Jon Lang (1994). Unfortunately this attitude had strong influence on many generations of architects and designers who followed him. Many design solutions were produced in different parts of the world which denied their rootedness to the cultural traditions and historical precedents of those particular places.

Within this context many international researchers have emphasized the value of people's participation such as Alexander, Boudon, Habraken, Hardie, Turner, Wilkinson and others. Bentz (1988), in his article "Active user participation in the housing process", quotes Boudon on user satisfaction:

*"Boudon (1972) emphasizes the importance of user satisfaction in relationship to housing design as discovered by Le Corbusier upon the completion of his 1926 villa settlement at Passac in France. Despite Corbusier's design and technical innovation, the people for whom the housing was intended refused to live in it. Corbusier's failure to take into account regional attitudes, user needs and expectations generated almost insurmountable resistance to his futuristic design. Over a fifty year period the inhabitants of Le Corbusier's project have become their own "architects". They have made changes both internally and externally by altering roofs, walls, windows and doors, adding annexes and arches; and repeatedly redesigning interiors. The users have effectively taken possession*



*of their housing by making it their own through ad hoc participation in the housing process."* (B. Bentz, 1988, p.69)

From the above examples it is evident that the study of the relationship between the collective cultural expression and the personal expression is of great value. Although it could be seen as a controversial matter, it underlies much of the conflicts among the different architectural interpretations which exist in the current architectural discourse. The question which might be suggested here is whether architectural theory can arrive at a way of linking these two expressions for the purpose of producing architecture which is both creative and supportive to culture and its flourishing. There is no doubt that many self expressive designs have been creative and supportive to the welfare of many societies. These were landmarks which have left a legacy of cultural pride and an architectural language which gave strong identities to their places. Therefore creativity in architecture could be achieved by individual expressive designs that assert and refine the collective cultural values of the society in hand. On the other hand personal expression which denies its cultural sources may lead to many kinds of psychological and social problems. In view of this the thesis will attempt to discuss theories and attitudes in architecture and their implications within the cultural territory.

However it is also important to consider other aspects that impinge on architecture such as the impact economics and politics have on the state of architecture. It is the study's contention that architects and decision makers may

not necessarily be blamable for the crisis in architecture and the built environment. They are conscious of and driven by forces which have permeated many other aspects of modern societies. One may ascribe the dilemma to the dominance of these forces over the other aspects which are equally important to living beings such as the social, religious and symbolic needs which can be seen as forming sustainable systems. It is important to consider that the constituents of these systems are not necessarily only the physical natural and technological resources. They include the various subjective values and perceptions which are symbolic of the social harmony and cultural order. What is then required is to investigate the nature of these values, the processes which lead to their evolution and also how they interact within their own systems.

The value of involving a systemic view in this interpretation is that it allows the distinction between changes that are compatible with the structure of the society and its needs and others which are arbitrary changes. It also allows a consideration of those arbitrary changes which disturb the system and hence undermine the principles of its sustainability. It will be argued that changes brought by design ideas for example are accepted and incorporated within the collective mind of the people when they imply no harm to their value systems. Alternatively changes that would imply structural damage to many value systems would be re-tested particularly in the long term of experience. Evidence of both acceptance and rejection of design ideas will be expressed in a variety of forms and responses. At present many societies experience a sense of alienation, loss and dissociation due to the spread of architectural solutions that have no

relevance to the indigenous culture of peoples, their perceptions, preferences and expectations.

With these concerns in mind the intention was directed towards studying the principles of adapting to the indigenous cultural forces which are expressed in architecture. The phenomenon of a different typology in architecture is a very important indication of the diversity of thoughts and the forces that lead to these differences. The association of geographical variations with cultural ones for example, may suggest that our links to nature in its diversity have lead to different systems of values and beliefs. In addition different priorities can be seen within the needs and choices of people. This would inevitably suggest a hierarchical structure for people's motivations and needs. These observations into world architectures have tremendous value in understanding the nature and the underlying structure of architecture in any particular place.

## **1. 2 Some Aspects of these Concerns**

As has been stated earlier, some of the accumulated observations of the kind of problems the author faced while working in the municipality has inspired the subject of this work. Some of these problems are subjective and relate to people's value systems and traditions. Others are related to more objective factors such as those of climate, technology, economic resources and the like.

One of the most critical aspects that are currently discussed is the provision and

management of energy. This is due to the economical and cost implication for different societies. Buildings rely on resources which could demand the provision of energy needed for building technology, industrial materials, methods of constructions and the like. For some time these were tackled with a minimum cost implication particularly in the contexts of traditional societies. The literature offers sufficient analysis of the high responses of some indigenous solutions to climate and other ecological and environmental requirements. The architectural characteristics of these solutions have acquired a strong aesthetic quality which became a language imbedded in people's minds and which effect their perceptions and preferences. The implication is that the society's familiarity and acquisition of this shared architectural language would enable that society to participate in the production, maintenance and appreciation of its architecture. The concern today, particularly expressed in the ongoing research on sustainability, suggests that new design solutions should be tested against this language. This is largely because this language is the abstraction of practical and environmental aspects which secure a management of energy with minimum demands on resources provision or expenses.

*This will lead to an important topic which is the main concern of the ongoing*

From the author's own experience, the introduction of new building designs has been faced with a variety of questions regarding their suitability to climate, social traditions and the various needs of people. The most important issue which emerged was lack of knowledge, skill and resources to maintain these buildings by people or local designers and builders. The state's response was to provide such resources instead of relying on people to participate and take part or share

in this responsibility. On the other hand many of these buildings had components and technologies which were produced elsewhere and as a result raised the costs of these buildings to a very high extent. One would argue that if change of building typology was ever needed, would it not be more appropriate if these changes were made locally by people whose awareness of the place and culture would refine their indigenous architecture without radical cost implications?

It could be argued also that changes in design typology should emerge as a result of changes in the social and cultural values or economical systems. Other possible reason for introducing new approaches could be in response to accumulating problems associated with the local and traditional types. In either of these circumstances, the new designs should either be produced locally by architects who have sufficient knowledge of the place and its people's needs or that the imported solution may be tested against these criteria. The adopted designs would be accepted by people and would give them an opportunity to experience their aesthetic quality and attachment.

This will lead to an important issue which is the main concern of the ongoing research on community and people participation. It could be suggested that problems arise due to the exclusion of people in the production of their own environments. Attempts are made in many countries to overcome the problem associated with lack of participation in the community affair. This may be due to political reasons but largely to the imposition of solutions that are not familiar to people. In countries such as Libya for example, many small towns still maintain

social ties and shared traditions. It would benefit these communities to allow their members the involvement in decision making regarding both the production of buildings and perhaps their designs. People of a strong community may know better their interest and the way to fulfil their needs and life style. They are also more informed about their religious and social values and traditions. Governments waste valuable resources in the process of providing for example services and amenities that could be achieved by people through their awareness of the place and their shared responsibilities.

The issue of people's participation may seem important within the contexts of many Third World Countries considering their weak economies and the many other challenges and constrains. This may not be the case, Goodey argued that *"In some European societies, it is still possible for a man to build his own home and in doing so experience design and building as one process, altering and modifying to meet his family needs. In many societies, however, this close contact between the individual and the creation of his home has been lost."* ( B. Goodey, 1981, p.32)

Another example cited by Goodey is related to the Dutch architect Habraken who has outlined a system of "supports" which allows residents to become involved in the structuring of their own homes. Interestingly, the Council of Europe paper which he prepared on the subject outlines, too, the supports or design structure which is available at the larger, urban scale. In his report, Habraken describes the traditional process of urban design in Amsterdam (1972,

p 2-3):

*"An example of a living organism, a city depending visually and spatially on the responsibility of the citizens, is furnished by the centre of Amsterdam, that part of the actual town that was laid out and built in the 17th century. The general outlines of an ambitious plan, conceived in the beginning of the 17th century, were designed by the city architect: it was a public enterprise and therefore initiated by the public authorities. But the public authorities went no further than defining the building areas, the width of the canals, laid out in the form of a crescent, and the width of the public centre where the town hall already stood, and where a much more imposing building was to be erected in the middle of the century.... All these 'homes' were individual cells, contributing to the life of the organism as a whole. But all these houses were built by private owners, according to their own individual needs and requirements, and on their own responsibility. They differ in size and shape, but they all, equally, contribute to the urban space. They may have been rebuilt or altered during the centuries - but the urban space still remains a unity, as the fundamental measurements, the proportion of the buildings in their context, have hardly been changed. And these houses still serve their original task: the task of being homes for people." ( B. Goodey, 1981, p.33)*



However, people have become more aware nowadays of the impact of rapid changes in the character of their cities and life style. The phenomenon is not confined to numbers of countries but it is becoming an international feature. In many Libyan towns, for example, it became impossible to recognise the original identity of these towns. This is largely due to the spread of a wide ranging mix of styles from different parts of the world. The imposition of the open planning systems there, destroying the physical urban structures of many Libyan towns and has consequently disturbing the social fabric. Many quarters which were once full of life in many aspects have disappeared and were replaced by suburban and scattered developments which can be considered as sleeping places.

For centuries different countries maintained a coherent identity which was a result of conscious awareness of continuity and persistence of prevailing conditions to which architecture addressed itself. The authority and reverence perceived in this identity, no doubt stem from long term evolution by trial and error of these solutions which then became a language created and shared by all people.

Changes in ideology and social and economical transformation which took place in the industrial countries have resulted in a variety of changes and developments in architecture. These were seen as indicators of progress as they involved techniques and methods provided by technology. Many traditional cultures were influenced by these new technological solutions and as a result local traditions started to loose their appeal to people and were seen as a mark of regression

and stagnation. Technological solutions however on the one hand brought a diversity of appearances for buildings to the extent that no system of relation can be seen even in a small street. This is due to the use of many different materials, techniques and standardised products which usually come from different factories and which are usually erected using foreign workmanship. On the other hand such indifference has only introduced an alienating sense of disharmony and chaos. These contrasting styles, have introduced monotony and sameness across different countries which lost their indigenous regional identity and hence fail to continue embracing a sense of belonging and cultural affinity (Ralph E 1980).

John F. C. Turner in his book Housing by People (1976) has identified some general problems associated with modern public housing that are similar to those experienced by the author. This may confirm that these problems are universal and are happening everywhere. The following is a list of some of these problems based on Turner's work:

(1) Modern public housing tenants have little control over where they live or what kinds of dwellings and local amenities they have, and no control at all over the design and construction of their homes, or even over the ways in which they are managed and maintained.

(2) Many typical modern products are virtually useless as soon as they go wrong; they are so expensive to repair that it would be much cheaper to throw away

which would in turn benefit the manufacturers and the suppliers

(3) Generally these houses have a much shorter life than housing assembled by small builders or craftsmen from combination of local and imported materials and components in response to local demands.

(4) The use-values of these large housing projects in all parts of the world are very low. So low, in fact, that most households' energies are concentrated on getting out instead of caring. Carelessness and vandalism are the hallmarks of modern mass housing, (John F. C. Turner, 1976).

### **1. 3. Summary**

The brief message of this section is to assert that human aspects of built environment are more complex issues than many architects and planners think. Human perception of environmental quality, their preferences and the expectations of designs are a manifestation of a deep structural network of needs and motivations. These not only have a certain priority and hierarchy but they vary from culture to culture. Many forces impinge on the society inherent in the place ought to be identified and properly met. It is far from sufficient to justify solutions to critical conditions and cultural imperatives on merely visual or international ideological bases. The outcome is a necessity to design and plan with care given to the wider aspects of the environment. The built environment is the expression of forces and attitudes which can be best understood within

their cultural and environmental contexts. This is a key feature evident in the growing theorisation of man-environment relations and their important implications on the various aspects of societies and their built environments. This is the subject of the following chapter.

## CHAPTER TWO

# MAN, CULTURE AND ENVIRONMENT



## CHAPTER TWO

# MAN, CULTURE AND ENVIRONMENT

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### 2. 1. Introduction:

There is a mutual relationship between man and his environment. Each shapes, and is shaped by the other. For long time man has depended for his survival on the quality and quantity of the elements which make up his environment. To understand this environment we have to look at the definitions of that term itself. There are many definitions for "environment" varying according to the subject dealt with. Rapoport defines it as series of relationships between elements and people, each relationship having a pattern. The environment reflects and helps relations and transactions between people and physical elements of the world. These relationships in the physical environment are basic spatially, primarily objects and people are related through separation in and by space. (A. Rapoport, 1977).

Lawton describes the environment as an ecological system, having five components: (1) The individual. (2) The physical environment, including all natural features of geography, climate and man made features which limit and facilitate behaviour and the "resources" of the environment. (3) The personal environment, including individuals who are an important source of behaviour control: family,



friends, authority figures, peer-group members, and so on. (4) The super personal environment that refers to the environmental characteristic resulting from the inhabitants, model personal characteristic. This is due to grouping by age, class, ethnic origin, lifestyle or other specific characteristics. (5) The social environment consisting of social norms and institutions. (Lawton, 1970)

In general, environment can be defined as any condition or influence outside the organism, group or others. The recent ecological thinking stresses the need to consider the organism in an environment, rather than organism and environment. Environment has a structure and is not a random assemblage of things. Therefore, even animal societies are not randomly distributed in space but are due to an interaction between the physical and social environment. (McBride, 1964, 1970; Wynne Edwards, 1962)

Thomas R. Detwyler and Melvin G. Marcus (1972) give another definition for the environment. They consider it as the aggregate of external conditions that influence the life of an individual or population, especially the life of man. This is an ecological definition that includes both physical and cultural components. A house, for example, is a feature of both the physical and cultural environments. On the one hand it is made of materials subject to the work of physical processes. On the other, it is largely a cultural fabrication. Consequently, a great interest would be made in aspects of the physical environment, including those that are material products of culture.



The physical environment can be subdivided into natural environment and built environment. The natural environment includes places and geographical features such as mountains, valleys and oceans. It also refers to environmental conditions such as temperature, rainfall, flora and fauna. The built environment refers to the changes made by man to the environment, in the forms of houses, cities, communities and farms.

## **2. 2. Culture and Environment:**

It is very important to bear in mind the way in which people and their culture affect the environment, and how physical environment affects cultures and people. Irwin Altman, and Martin Chemers (1984) argue that people, culture and the physical environment are a trio that cannot be understood separately. " we must consider the three as unity." (Irwin Altman & Martin Chemers, 1984).

The built environments that people create, such as homes, are designed in very different ways around the world. In many places, the design is clearly affected by culture which varies from place to place. For instance, in the Middle East it is cultural tradition that buildings have high ceilings to overcome the heat of the climate. In the South Pacific the houses are designed to capitalise on prevailing breezes. In Alaska igloos effectively conserve heat and withstand wind and the elements. Housing design is very obviously responsive to the demands of the environment. But there are some exceptions (Rapoport, 1969). For example houses in certain parts of India are oriented towards sacred directions, often

counter to the topography of the land. Similarly buildings in the jungles of Brazil have heavy roofs and thick walls which are uncomfortable in a tropical climate which illustrates the priority of culture on climate or topographical conditions in these particular areas.

### **2. 3. Definition of Culture:**

One simple and broad definition of culture states that culture is the man made part of the human environment (Herskovites, 1952). There are several components of culture which we can say refer to beliefs, perceptions, values and norms, customs and behaviour of the group or society. It also includes what people believe to be true of the world, their lives and the environment. Culture in any particular society decides what is good or bad, acceptable or unacceptable to a specific society. This includes rules and beliefs about how to behave and do things. (I. Altman & M. Chemers, 1984).

So, values, perceptions, modes and cognition of appropriate behaviour all form a cluster of characteristics implied in the concept of culture. Culture is all these terms of behaviour and points of view shared among groups of people about themselves and about the others and the world.

These shared beliefs, values and styles of behaviour are passed on to others, especially children. According to Rapoport, the culture core which embodies these values will remain as valuable source of reference from one generation to

the next. *"Except dramatic events, cultural changes are slow and evolutionary, partly because so much of a culture is implicit, taken for granted and difficult to label."* (I. Altman & M. Chemers, 1984) The concept of culture reflects a multi-faced set of things, from abstract principles about how to view the world, to more concrete actions, such as the way of behaving and relating to the environment and to ways of raising children.

Generally there is no shortage of definition for the concept of "culture." Kroeber and Kluckhohn (1952) described most characteristics of the concept as it is currently used: *"A set of attributes and products of human society, and there with mankind, which are extra semantic and transmissible by mechanisms other than biological heredity, and are as essentially lacking in subhuman species as they are characteristic of the human species as it is aggregated in its societies."* (Kroeber and Kluckhohn, 1952, p.284).

#### **2. 4. Man, Culture and Environment:**

The relations between man, culture and environment are very variable, and there have been several views on them. F.Ujam (1987) in his PhD thesis suggests that the problem has been about the nature of the relationship between man and his ecological environment. The old answer was that the physical environment determines human action or in a broader sense influences them in what they do. This has been called the (physical determinism) and it considers the importance of physical environment over other factors. But the alternative answer is that the

view which has been called (man's culture) is the primary determining factor in behavioural terms.

According to this view the environment is secondary in its role and the culture plays a strong role in altering the environment. Until now what has been asked has been why and in what way man changes his environment?. The answer has been varied from place to place, from group to group. (G.Carter, 1978).

## **2. 5. The School of Cultural Ecology:**

The relationships between man, culture and environment form the bases of several different studies in social and behavioural science. It has been found that human ecologists focus on culture and environment, while anthropologists are quite interested in how people in different cultures and at different periods in history have shaped their homes, communities and cities in relation to cultural and environmental variables. So, the role of the physical environment, as one powerful determinant of custom, life style, and behaviour in different cultures, is emphasised in the point of view of Cultural Ecology, (I. Altman, 1984).

The culture-environment relationship is strong in cases where environmental phenomena are considered responsible for the origin or development of cultural behaviour. In this sense the environment is seen strongly to determine, limit and affect behaviour and cultural processes. The other point of view is that only a very weak relationship exists between the environment and cultural behaviour,

one having little or no influence on the other. They are less firm in the view about how the environment affects the social system, (I. Altman, 1984).

John W. Berry (1976) criticises the anthropologists for not admitting any role for ecological factors, while those who do, claim a number of differing points of interaction and influences. He also argues that there are two varying extremes existing within the cultural ecologists discipline. Berry mentioned Vayda's assertion that:

*"two main ways of relating cultural behaviour to environmental phenomena may be distinguished; either by showing that items of cultural behaviour function as part of system that also includes environmental phenomena, or responsible in some manner for the origin or development of cultural behaviour."* (Vayda, 1969, p.xi).

Berry says that the former (the weak version) of Cultural Ecology is a correlative approach which emphasises the functional interdependencies between the physical environment and cultural variables. While he calls the latter (the strong version) a causal approach which attempts to account for cultural origin, (J. W. Berry, 1976). Culture is man's most important instrument for adaptation, according to the (strong version). He also cited an example abstracted from Boas' assertion as follows:

*"It is not difficult to illustrate the important influence of geographical*

*environment upon forms of invention. The variety of habitations used by tribes of different areas offer an example of its influence...*

*Environmental influences appear in the territorial limits of certain tribes of people, as well as in the distribution and density of population. Even in the more complex forms of the mental life, the influence of the environment may be found; as in nature myths explaining the activity of volcanoes or the presence of curious land forms, or in beliefs and customs relating to the local characterization of the reasons." (Boas, 1911, p.159).*

So, the fundamental meaning of ecology according to the school of cultural ecology, is adaptation to environment. If we look to one important contribution which the school of Cultural Ecology has produced, the concept of the cultural core. This was first introduced by J.H.Steward, (1955) and presented to the field of Architecture by F.Ujam in his thesis "Ecology, Culture and Cognition" 1987.

Steward suggested that the core of culture includes such social, political and religious patterns as are empirically determined to be closely connected with these arrangements. Other features may have great potential variability because they are less strongly tied to the core. These latter or secondary features are determined to a great extent by purely cultural historical factors, by random innovations or by diffusion and give the appearance of out look distinctiveness to cultures with similar cores.

## 2. 6. Cultural Evolution:

There is some confusion in the literature relating to cultural-ecology and cultural-evolution. The most detailed account of this particular problem is presented in an essay by Sahlins and Service (1960). They start by introducing some definitions of the term evolution. Some anthropologists stated that evolution is simply change, to others it is growth or development, which is a special kind of change. Some would discount the concept of progress from evolution. Others accept (advance) but avoid the term (progress.) Some stated that evolution in its most significant aspect is "multi-linear" and in its least significant aspect, universal. (Steward, 1975)

There are two main views about the nature of evolution. One of them says that, evolution is the succession of stages. The second sees evolution as a grand movement in a certain direction and when changes in form follow that direction they are evolutionary. Evolution is movement from homogeneity to heterogeneity. Within the latter view is Julian Huxley's definition of evolution. He stated that *"evolution may be regarded as the process by which the utilization of the earth's resources by living matter is rendered progressively more efficient"* (Huxley, 1943)

Sahlins and Service said that in both its biological and cultural spheres, evolution moves simultaneously in two directions. On one hand it creates diversity through adaptive modification: new forms differentiated from old. On the other hand evolution generates progress: higher forms arise from, and surpass, lower forms.



The former of these directions is specific evolution and the latter is general evolution. But both are aspects of the same total process. Any given change in a form of life or culture can be viewed either in the perspective of adaptation or from the point of view of total progress. (Sahlins & Service, 1960).

## 2. 7. The Attitude Towards the Environment:

The ways people think and feel about the environment reflect mediating psychological process as that can give clues to the behaviours and actions that people may take with respect to the environment. According to Rapoport *"All this suggests that the attitude towards nature and site would be an important aspects of the creation of house form, or its modification by the site, and that the relation of man to landscape is the first aspect which needs to be considered. A number of classifications of such attitudes have been proposed, but the most useful from our point of view examines it in terms of the I-Thou and I-It relation, which historically takes three forms: 1. Religious and cosmological. The environment is regarded as dominant, and man is less than nature. 2. Symbiotic. Here man and nature are in a state of balance, and man regards himself as responsible to God for nature and the earth and as steward and custodian of nature. 3. Exploitative. Man is the completer and modifier of nature, then creator, and finally destroyer of the environment."* (Rapoport, 1969, p.75) This view does not differ from the view held by Kluckhohn and supported by Altman and Chemers as we will see in the following section.

*"In addition to having knowledge about the environment, people have attitudes about it including preferences or likes and dislikes for places."* (I. Altman & M. Chemers, 1984, p.61). Irwin Altman & Martin Chemers in their book Culture and Environment (1984), gave an example abstracted from Florence Kluckhohn which examines peoples attitude towards nature, can be quoted as follows:

*"Florence Kluckhohn (1953), an anthropologist, described three general orientations to nature held by people in different cultures and at different times in history: (1) people as subjugated to nature, living at the mercy of a powerful and uncompromising nature; (2) people as over nature, dominating, exploiting, and controlling the environment; (3) people as an inherent part of nature, like animals, trees, and rivers, trying to live in harmony with the environment."* (I. Altman & M. Chemers, 1984, p.15).

He also explains that one of these views may predominate in a given society, but also may have elements from the other two. It is possible that the societies have all these orientations in some form or other, but one of them will be a more dominant force than the others. Florence Kluckhohn continues to describe each of these three general orientations in fuller detail. This will be discussed below.

### 2. 7. 1. People as Subjugated to Nature:

People feel that they live under the control of nature. In many societies and periods of history especially societies which having little industrial technology or having excessively harsh and unpredictable climates, they always feel that the environment is viewed as powerful, uncontrollable, and unpredictable. So, all that people can do is adapt as best they can, and accept the good and the bad from the environment.

People in this situation can only act in a subordinate and submissive fashion in the face of all powerful and all dominating natural forces, which they have no control over. For example, people who live in earthquake regions or people who live on south pacific islands are exposed to hurricanes and tidal waves. Others who live in a primitive way in central Africa or the Amazon forest in central Latin America etc., reflect a fatalistic value system that says: *"There will be good years and bad years; we must accept what comes and do the best we can, one must simply wait things out and hope for the best."* (Irwin Altman & Martin Chemers, 1984, p.16).

These people usually see these natural disasters as "the will of God," or as a punishment or warning from God to them. They believe that the only way of preventing these things happening again is by praying and behaving properly. Although, they still feel powerless and subject to the will of God or nature. (Irwin Altman & Martin Chemers, 1984).

### 2. 7. 2. People as Above Nature:

This is the view that people are superior to their natural surrounding. Man has full responsibility for his environment and therefore the right to control and modify it to accommodate human needs. This view is dominant in Western and especially American cultures. There are many examples in life such as the use of natural resources, land use, and exploitation of the earth. All *"such activities reflect our view that nature exists to serve people and that almost any form of (progress) that makes life easier or more pleasant is acceptable"* (Irwin Altman & Martin Chemers, 1984, p.18)..

This view was associated with Western society under the scientific and industrial revolution, (Ittelson et al., 1974). Where science and technology rapidly produced vehicles for conquering nature it reinforced the idea that people were above and separate from nature.

*"to control temperature, to cure illness, to raise food efficiently, to be able to kill animals and people in large number, to explore outer space, to build bridges over seemingly increasable rivers, to construct dams and massive irrigation systems, to settle (uninhabitable) land, and to mine the earth's resources all attested to the superiority and uniqueness of people"* (Irwin Altman & Martin Chemers, 1984, p.20).

### 2. 7. 3. People as Part of Nature:

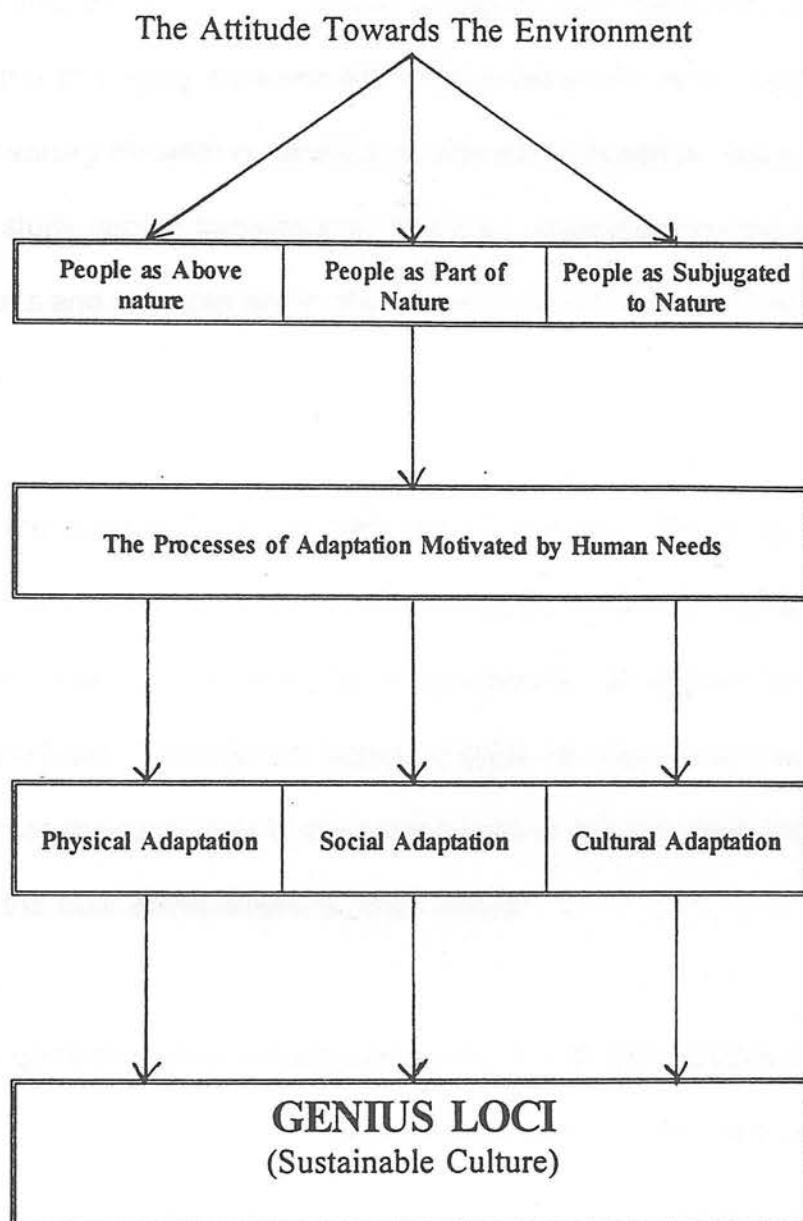
This view looks to human being as part of nature in the same way as animals, trees and flowers. It is the view that is strongly held by ecologists at present for its valuable implication in sustainability. According to Altman and Chemers (1984) that: Ittelson et al.(1974) describe how the early Greeks viewed the universe as some harmonious unity of which people were a part. Nature was a stable, orderly system which operated smoothly. The seasons following one another, natural events occurring predictably and people's lives flowing in a clock like and orderly way. Even life and death had a quality of harmony and cycling.

This thinking of harmony with nature appears in oriental philosophy and religion. People in the East look to all things in nature as sacred and not to be exploited by man. One cannot impose oneself on nature, rather one must flow with it, be part of it. We have to understand its changing patterns, and adapt to natural events.

This does not mean passivity or surrendering, but means man's understanding of nature's flow, adapting himself to work within its boundaries and not disturbing the system. The most important thing here is the idea that people are part of nature and not the centre of a natural universe, so they must live in harmony with nature and be responsible for it.

From religious point of view the God of many cultures asks people to respect

nature, animals, plants and other resources, and to look after them and enjoy the life which He gives us and use them according to our needs. Excessive exploitation of these for economical purposes eventually leads to serious damage and destruction been placed on the environment.



**Figure 2.1:** A model for sustainable Environment which forms the core of the thesis subject. (Source: by the Author.)

## **2. 8. Coping as basis for Expression:**

### **2. 8. 1. Introduction:**

From the last attitude people held as part of nature Man developed mechanism to deal with the changing environment. This mechanism is a coping attitude which takes a variety of conduct behaviours expressed in certain ways. Therefore it is useful to study coping behaviour as basis for understanding the expression of human values and attitudes which are related to their needs and the motivation behind them.

Motivation is the guiding force behind coping behaviour. This is to mean that coping behaviour is directed and motivated towards satisfying human needs. It is noticed that social coping behaviour is common for all species but it is very elaborate in humans. Throughout history, people do have and show a large capacity to adapt their activities to the possibilities of the new built environment, and to adapt the built environment to their needs.

Adaptation in general means coping behaviour, so, in this context it would be useful to study the implication of coping behaviour on the development of expression behaviour. The study presents the difference between coping and expression and it was decided that the comparison will clarify the aim of this study which is the introduction of architecture as an expression of characteristics learned during human adaptation and fulfilling of human needs and motivations.



The notion that this thesis holds concerning both coping and expression is that to understand fully the parameter and the characteristics of expression in architecture or any artifact, we need to trace the evolution of this expressive value through the dynamic and adaptive nature of human behaviour. In other words, expression emerges from the adaptive behaviour as a way of recording in a rather more abstract form all the characteristics that are valuable for the continuity of human life and its quality.

The following section elaborates on this subject considering the thesis's view that expression can be seen as a confirmation of human coping activities rather than a contradictory aspect.

### **2. 8. 2. Means and Ends:**

Coping is characteristically a means to an end. It is the process which leads to that end and not the end itself. Expression is often an end in itself. We might disagree with functionalist theory which argues that since building is essentially a means to an end, we appreciate buildings as means and therefore the value of a building is determined by the extent to which it fulfils its function and not by any purely (aesthetic) considerations. The reason for our rejection of such notion is that the aesthetic dimensions in architecture are the documentation of all functional, natural and social conditions. Architecture cannot be reduced to the fulfilment of only one among many concepts and conditions that it responds to. According to this it is not valid theory of architectural aesthetic that which sees

the beauty of buildings was achieved in the conformity of form to function. This theory might naturally seem to have the consequence that the appreciation of architecture is wholly unlike the appreciation of other forms of art, those being valued not as means, but for their own sakes as ends. However, to put the point in that way is to risk ambiguity. In the final analysis what is the distinction between valuing something as a means and as an end? The thesis argues that architecture is at the end an end by itself which was arrived at following a long processes of coping and adapting human activities. Another way of putting this argument is that for coping to continue as a valuable human behaviour, expression is then needed as a tool to confirm and maintain the messages that emerge from coping behaviour.

It might be useful here to quote the English philosopher R. G. Collingwood. He developed his exploration of art and aesthetics from a distinction made between art and craft. Initially it seems quite reasonable to distinguish the attitude of the craftsman -who aims at a certain result and does what he can to achieve it- from that of the artist, who knows what he is doing, as it were, only when it is done. Collingwood argues that it is precisely the case of architecture which casts doubt on that distinction. For whatever else it is, architecture is certainly, in Collingwood's sense, a craft. The utility of a building is not an accidental property; it defines the architect's endeavour. (Collingwood, 1947), see (R. Scruton, 1979, pp.6&7).

One would then suggest that the problem Collingwood refers to is related to the

process of production. In that architecture, art and craft all express the society's artistic achievements though created to suit particular and maybe different functions of art, craft and architecture. They all indicate people's capabilities to abstract values from a variety of resources in the form of art or aesthetic theme in architecture for example. So that these rather artificial barriers would leave for a more unified views of the value of each of these human activities.

### **2. 8. 3. Conscious or Unconscious:**

One of the most recurring themes in architectural theorisation is the distinction between the conscious and unconscious or subconscious. Throughout man's adaptation to the physical and socio/cultural environments coping could be seen as a conscious behaviour. This is due to the need to find out about the place and to take action towards forces and factors that impinge on people. One may consider the primary solutions to meet climatic conditions, for example, as a result of some kind of elaboration and thoughtful design responses. The outcome which is then tested and examined, not necessarily in terms related to compatibility with climate but also with the emerging behavioural patterns, would be preserved through cultural traditions. This may take the form of an abstracted art, be embodied in traditional knowledge or any artifact. The value of expression will then be obvious in a sense that these abstract forms would help the successive generations to communicate with the practical implications of these solutions or artifacts.

This view presented here may differ with C. Alexander's definition of self-conscious and unselfconscious designs. He sees primitive and vernacular architecture produced by non professionals (builders or craftsmen) as unselfconscious and other architecture which is done by professionals (architects or planners) as self-conscious. Despite this, primitive and vernacular architecture was produced by the non professionals in our terms but it is produced collectively by groups of people who are very conscious of what they are doing. They have a procedure to achieve their aims which is to provide buildings to live in.

*"Primitive builders are able to conserve their materials because they have detailed and precise knowledge of the behaviour and characteristics of material, not just in terms of climatic response and construction, but also in regard to weathering -how the materials and building fabric will stand up to the ravages of time and weather. This understanding tends to lead to clear, straightforward solutions to the problems posed by gravity and weathering." (Rapoport, 1969, p.105).*

As a result the view of this thesis is that there exists a strong relation between conscious and unconscious behaviour as these represent two interconnected processes in the production of man made artifacts. This demonstrates the main point that the thesis intended to make, that is the built environment is the expression of values and messages that emerged throughout people's coping with the characteristics of their environment and that drawing boundaries between

the various human aspects is an expression of fragmentation attitude to architecture.

#### **2. 8. 4. Learned or Unlearned:**

Coping is according to this thesis a process of learning. People confront unfamiliar situations and need to learn about the objects and events that are involved. They then make a series of responses to be tested and examined against the forces and external effects. The outcome of this learning process will need to be encoded in human memories and has to be expressed in the different aesthetic and abstract forms of the culture in hand. Cultural values and features are no longer required to be tested as they have already undergone this process in man's long term coping strategies with the environment. Architecture exists first and foremost as a process of arrangement of elements in which every normal man or woman may participate, and indeed do participate, to the extent that he/she builds, decorates or arranges his/her rooms by learning to do so from his/her past experiences and the experiences of others.

#### **2. 8. 5. Summary:**

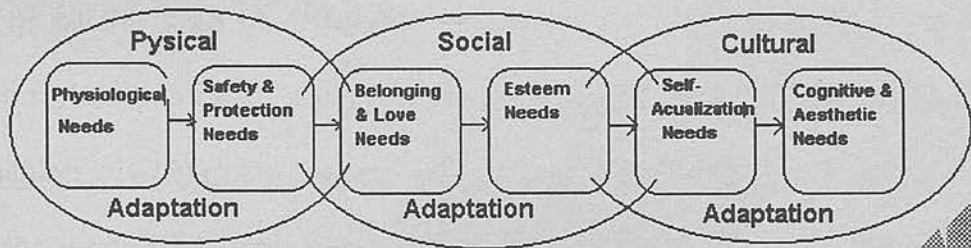
Architecture in general is not a media for sole personal interpretation which may take the form of fashions but is the expression of the regularity of the broader cultural, social and physical contexts. For the majority of people architecture is the expression of the awareness of existing factors affecting people's perception

and attitudes towards living conditions encountering them. From the coping point of view, the aesthetic quality of a building has to be seen through this process of transferring and promoting the basic and the physical features into a higher forms of aesthetic and cultural experience. The implication of this is that architects may need to consider designing with a stronger sense of place and of peoples' needs and expectations.



## CHAPTER THREE

# ADAPTATION & MOTIVATION OF HUMAN NEEDS





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### 3. 1. Adaptation:

#### 3. 1. 1. Introduction:

First of all the idea of adaptation processes initially came to my mind from reading Alexander's books A Pattern Language (1977) and The Timeless Way of Building. (1979) In the beginning these patterns which he had brought from all over the world looked very impressive. As was mentioned previously these are good examples of successful solutions done through trial and error over a long period of time until they reach a complete and satisfactory form on a number of conditions. But one may ask what the process was that had led to these good results? Was there a logical law responsible for producing those successful patterns throughout the world?

It was realised that it is not quite enough to introduce these collected patterns as they happen in nature although it was a valuable contribution to consider them as a means of solving some of the architectural problems. The important task is to go beyond the phenomena and to discover how these patterns work and which

rules govern them to become good and satisfactory. For this reason, it was decided to study the generative process which lead to the evolution of these patterns. It is the process of adaptation which has an important effect on the progress of these patterns that the study is concerned with.

From early on man has tried to cope with any new situations he had to experience in his every day life. If we look through the long history of man we will notice that in some ways he has succeeded in adapting himself to his environment. He also altered that environment to suit his evolving needs. *"The group modifies either its environment or its habits, or both, in order to achieve a way of life better suited to its needs and tastes."* (R.Dubos, 1980).

According to John W.Berry (1976), the term adaptation is an ambiguous one. It refers to the changes in culture or behaviour which are associated with changes in an environmental setting. In another word, adaptation is a vague term because it can mean so many different things to different people. The layman, the biologist, the physician and the sociologist use the word, each in his own way. Each denotes a multiplicity of genetic, physiological, psychic and social phenomena, which are completely unrelated in their fundamental mechanism.

For the general biologist, the only measure of adaptive fitness to a particular environment is the extent to which the organisms of the species under consideration can occupy this environment and make affective use of its resources. For the layman adaptation is the ability to function effectively, happily

and for as long as possible, in a particular environment. However, the word's meaning changes with the conditions of its use.

What is adaptation and adaptation to which environment do we mean?

Adaptation is a natural process that has always solved Man's problems with nature. The adaptation to environment has been produced through the process of trial and error, and the successful results retained and passed on through cultural traditions which include knowledge, skills, technology and science.

By environment we mean that which relates to man and his surrounding which in one way or another affects his way of life. For instance:

**\*Physical environment;** including climate, topography, resources, basic economy, etc.

**\*Cultural environment;** life style, collective subconscious, beliefs, perceptions, ethos, myths, etc.

**\*Religious environment;** and, traditions.

**\*Social environment;** the set of rules, habits, rituals, etc.

Therefore, adaptation is a simple natural process that we carry out every day of our lives. For example when it is very cold the first thing we do to adapt ourselves to the new situation is by wearing thick and warm clothes. The opposite happens when it is very hot, we remove or reduce our clothes. Sometimes we use water to regulate our temperature by swimming or having a bath.

### 3. 1. 2. The Process of Adaptation:

Greenough, (1947) argues that every detail of organic form has its functional purpose. *"The law of adaptation is the fundamental law of nature in all [physical, social as well as cultural] structure"* (Greenough, 1947). It has also been suggested that in nature, forms are the outcome of environment. Environment decides function, and forms are the result of function (L.Eiditz, 1881).

Building forms must be adapted in an equivalent way to the social and cultural environment in which they are situated and the functions resulting from the environment are fully expressed in the architectural form. When various buildings, tools, or objects are put into use they are subjected to a variety of tests, of their strength, their suitability, of whatever characteristics there are which confer appropriateness or fitness on that building or object for its particular function. Of course there is the important matter of local resources, which will have effect on the available material. Effects also will be seen in the tools and manufacturing processes used to make these buildings.

Similarity of form is to be attributed to the fact of copying, this immediately implies a process extending over time as designs are copied and copied again. Large numbers of the same design are made and those designs which have slight variations in form may confer a particular advantage, increased fitness. Such varieties will tend to be preserved or selected while less fit ones will be lost. They will either tend to survive longer or perhaps they will be preferred as models

when it comes to copying their forms in new building or tools (P. Steadman, 1979).

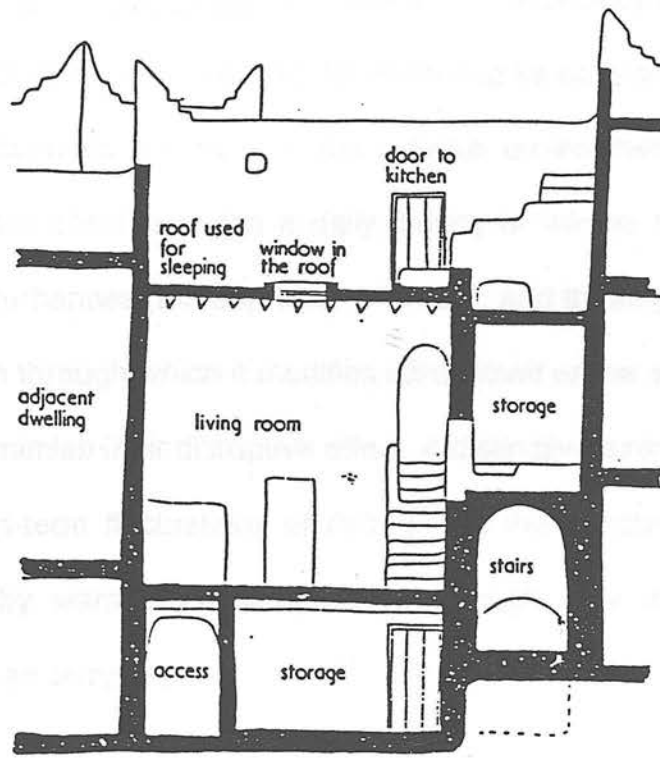
It is possible that variation may be introduced accidentally, at random; selection processes will ensure the spread of the advantageous features, and the elimination of the disadvantageous ones. It is the set of genetic instructions or (Cognitive Knowledge) which is somehow passed from one generation of builders and craftsman to another.

Steadman states that: *"a series of buildings, one succeeding the other, and the last continuing not only all the improvements before introduced into all the former examples, but contributing something new itself towards perfecting a style"* (P.Steadman, 1979, p.83).

But it is important to notice the necessity of a considerable length of time over which the evolutionary process had spread and made a series of buildings with slight variations before selecting those with somewhat more satisfactory performances.

For example, the knowledge of how to build in an area in the South West of Libya, e.g. in Ghadams city, follows the same process, (Figure 3.1). The form of building adopted in Ghadams has been successfully repeated through time, and transmitted from one generation to another, by the process of knowledge. This prototype, and the authentic form, whose essence is deeply felt through its

adaptability to its setting and its high performance to environmental conditions, can be seen as good lessons for the new generation of that area.



**Figure 3.1:**Section of a typical dwelling in the oasis of Ghadames, Libya.  
(Source:M.Evans, 1980 Housing, Climate..)

### 3. 1. 3. Homeostasis:

The literature on theories of adaptation has introduced the concept of homeostasis as an important mechanism of adaptive process that enables organisms to cope with environmental changes. Its application in architecture can be very important to assess changes in forms and peoples attitudes to these changes.

However, according to Philip Steadman (1979), the Homeostat refers to the concept of 'homeostasis' first developed by Walter B. Cannon in his important book The Wisdom of the Body. 'Homeostasis' is explicit by the ability of the body to manage its internal functioning, for reserving its physiological stability, in the face of disturbances coming from the external environment. Every organism is exposed in the short term (on a daily, hourly or minute to minute basis) to a series of disturbances (temperature, cold etc.); and these generate reactions by the organism through which it modifies either itself or the environment in such a way as to minimise their disruptive effect. A distinctive example of stability in the face of short-term fluctuations of this kind is the constant body temperature maintained by warm-blooded creatures through very large changes of the surrounding air temperature.

*"Any rise in the external temperature is typically and automatically met by various bodily changes: slowing takes place in the metabolism rate so that less body heat is produced, the body starts to sweat and so loses heat by evaporation of water from the skin, and so on. Equally a temperature drop will induce another set of reaction: shivering, which produces heat by muscular activity, an increase in the metabolic rate, a slight erection of the hair or feathers so as to trap a thicker insulating layer of air in the interstices, and so on."* (P. Steadman, 1979, p.174).

Cannon restricted the use of the word homeostasis to refer to such physiological



regulating mechanisms of the body which serve to insulate the various internal organs from environmental disruption. Steadman also mentioned that Wiener and Ashby extend their meaning for the term, even within the biological sphere, to give it a much wider sense. As Wiener puts it, *"The process by which we living beings resist the general stream of corruption and decay is known as homeostasis."* Similarly, in Ashby's argument, all adaptations of the body, as well as all adapted forms of behaviour in animals, should be regarded as homeostatic, in so far as they serve regulating functions which act to ensure the continued survival of the individual or of the species.

Steadman argues that adaptation processes of the body, and intuitive forms of behaviour, being obtained through evolution, are essentially the product of trial and error. Certain simple forms of a conditioned learning process may also be based, at least in part, on trial and error in another form. The animal experiments tentatively with various modes of behaviour, and discovers through pain and failure what are unsuccessful strategies, until in the end it finds, with pleasure, what actions lead to success. One example which Ashby gives is that of a kitten in front of a fire, discovering by moving first too close, and then too far away, what is the distance at which it can keep comfortably warm. (P. Steadman, 1979).

Steadman cited that Ashby sees homeostat as a machine whose objective is to duplicate in a highly simplified form the kinds of stability or homeostasis which is to be found in the stability of the organism conferred by adaptations of body or behaviour, acquired either through evolution or through learning. This will lead

us to study two systems which govern the reaction of the human being responding to his surrounding environment. These are the behavioural and the biological buffering systems.

### **3. 1. 4. Behavioural & Biological Buffering Systems:**

The literature also has introduced the notion of Behavioural and Biological Buffering Systems as an important adaptive mechanism which clarifies the hierarchical relationship between biological adaptive responses and the behavioural. The latter has particular significance in shedding light on the nature of perceptual and social attributes of architectural form. There are two buffering systems (behavioural and biological) and the difference between them is; in behavioural buffering system, the organism or group generally attempts to regulate the surrounding environment. On the other hand the biological buffering system, regulates the internal environment by morphological or physiological means. It should be apparent that both systems are concerned with environmental regulation, but their potentials may be rather different depending on the stress, (R. Brooke Thomas, 1975).

There are some stressors that can be blocked more effectively by regulating the body's internal environment, as frequently occurs in response to infectious disease. Others, such as cold, are more easily regulated technologically or behaviourally through external environment modification. Sometimes the stress is intense and can reach the point where the behavioural buffering system alone

is insufficient. Consequently, engagement of the biological system is necessary if homeostasis is to be maintained. There are similarities, which can be profitably combined in an approach to general adaptation. Despite this physiological and ecological concepts relate to different levels of biological and social organization.

In the physiological 'stress concept,' where environmental conditions reach the stage where they are capable of disrupting homeostasis, a physiological strain on the organism occurs. This strain must consequently be reduced and a dynamic equilibrium reestablished if permanent dysfunction or death is to be prevented. Thus, the concept is oriented primarily towards the analysis of the maintenance of homeostasis in the individual organism.

Thomas suggested that the ecological concept of limiting factors is oriented directly at the population or biotic community level and concerns the biomass that can be supported on a given resource base. Two points are important here; (a) the population characteristics of a group will influence its ability to operate within limiting factors, and (b) if the limiting factors are not dealt with in adequate amounts, stress conditions will result, (R. Brooke Thomas, 1975).

There are two types of limiting factors. One of them is linked directly and the other indirectly. For example with the resources that are necessary to meet biological requirements, such as food, the linkage is quite direct. Low intake of some limited nutrient results in a physiological strain and ultimately manifests itself in deficiency. The second type of limiting factor does not directly lead to a

stress condition but, instead, influences the operational effectiveness of the behavioural buffering system. Thus, agricultural tools are needed for environmental modification if food resources are to be produced (R. Brooke Thomas, 1975).

To identify essentially limited resources important selection criteria are those resources that: (a) are critical in the operation of the adaptive system; (b) are frequently relied upon; (c) are scarce; and (d) have no other alternatives.

So, the behavioural buffering system is an adaptive pathway oriented at the regulation of the external environment by technology, individual behaviour, social behaviour, and inter group cooperation. The technological pathway functions in extending the adaptive options of the organism or group beyond its biological potential to modify and regulate the environment.

In summary, environmental constraints are considered both as stressors and limiting factors. All that is required the integration of physiological and ecological concepts of adaptation as well as concepts of behaviour and genetics. The adaptive responses to these constraints are divided into two functionally distinct buffering systems; the behavioural and biological.

Technology is considered to be adaptation's tool since it is derived from local resources and available to everyone. It has provided us with a variety of adaptation to the environment, which are being resorted increasingly to reduce

the extent or severity of the individual's exposure to environmental stressors.

The problem of human adaptation is presented as a dialectic between permanency and change. The response that a particular person makes to a given situation is conditioned by his past; and his evolutionary and experiential background. These sharply limit the range of conditions within which his responses can be successful. Nevertheless, experience shows that human beings are not passive components in an adaptive system. Their responses commonly manifest themselves as acts of personal creation. Each person tries to achieve some self selection, even while he or she is responding to stimuli and adapting to them. (R.Dubos, 1968 & 1980).

These studies in adaptation have shown that adaptation is not an arbitrary phenomenon. It is conditioned by mechanisms of biological and behavioural systems and according to a certain order. In the following section the thesis will introduce the study of human motivations by Maslow. This choice was made on the basis that motivations are also not arbitrary. They follow a particular hierarchical order that Maslow explained in his Model.

### 3. 2. Motivation Theory:

#### 3. 2. 1. Introduction:

In this section the study introduces Maslow's Motivation Model to demonstrate the links that may exist between both adaptation and motivation. The intention is to show how this association is implicated in architectural design.

Various questions have to underlie any attempt to establish that such links exist. These are: why adaptation and what causes it? What forces are behind or lead to the adaptation processes? There has to be no doubt that man has shaped and altered his environment to suit his own needs. While the natural environment offers man numerous resources, man still has to cope with the external forces and conditions and to fulfil his various needs. In the process of achieving this the emerging built form has a tendency to impose new circumstances in which people have to adapt to living together with a sense of harmony and sharing of survival values. It will be demonstrated that these are communicated in the more abstract forms of culture and aesthetics. In all these processes man has been driven by his desire to fulfil a set of hierarchical motivations which were seen as the actual reasons for creating the built environment in a compatible way that is characteristic of most of the traditional cultures.

In his book Motivation and Personality the most important ideas of Maslow's life work were elaborated, forming the foundation of his views about human

psychology. There were only two major forces in psychology when Maslow began his career. These two forces were; the experimental, behaviourist approach and the clinical, psychoanalytic approach. For Maslow these two models were not sufficient.

*"On the whole . . . I think it is fair to say that human history is a record of the ways in which human nature has been sold short. The higher possibilities of human nature have practically always been underestimated."* (Maslow, 1971)

Maslow was dedicating his life to the study of people that he considered psychologically healthy: *"indeed, self-actualizing people, those who come to a high level of maturation, health and self-fulfilment, have so much to teach us that sometimes they seem almost like different human beings."* (Maslow, 1968)

He argues that *"we have come to the point in biological history where we are now responsible for our own evolution. We have become self-evolves [sic]. Evolution means selecting and therefore, choosing and deciding, and this means valuing."* (Maslow, 1971)

The values that a self-actualization process comes to appreciate include truth, creativity, beauty, goodness, wholeness, aliveness, uniqueness, justice, simplicity and self-sufficiency. Maslow's study of human nature led him to many conclusions. These are the most important ones:



\*Human beings have an innate tendency to move towards higher levels of health, creativity, and self-fulfilment.

\*Neurosis may be regarded as a blockage of the tendency towards self-actualization.

\*The evolution of a synergistic society is a natural and essential process. This is a society in which all individuals may reach a high level of self development, without restricting each other's freedom.

Business efficiency and personal growth are not incompatible, the process of self-actualization leads each individual to the highest levels of efficiency.

Maslow has found a theory of human motivation which assumes that needs are arranged along a hierarchy of priority or potency. When the needs that have the greatest potency and priority are satisfied, the next needs in the hierarchy emerge and press for satisfaction. When these are satisfied, another step up the ladder of motives is taken. Therefore, once a person is freed from, say the domination of physiological needs, he moves to a position which allows his rich potential to flourish and he is free to become (self-actualised.)

There have been a number of strong exceptions to this hierarchical order according to Maslow. In this sense the study argues against the assumption that priority of needs may constrain creativity in art and other higher human intellectual activities. Maslow's Model however is still relevant to studying the evolution and the complex nature of human perception and the internal forces that have shaped preferences and expectation.

However, Maslow argues that, if we examine carefully the average desires that we have in daily life, we find that they have at least one important characteristic. They are usually means to an end rather than ends in themselves. We need money so that we can have an automobile. And in a turn we may want the automobile because the neighbours have one. We do not wish to feel inferior to them, so we can retain our own self-respect and so can be loved and respected by others. Usually when a conscious desire is analyzed we find that we can go behind it and discover other, more fundamental aims of the individual. The particular desires that pass through our consciousness dozens of times a day are not in themselves as important as what they stand for, but where they lead, what they ultimately mean upon deeper analysis (Maslow, 1954).

According to Maslow there is sufficient anthropological evidence to show that the fundamental or ultimate desires of all human beings do not differ nearly as much as do their conscious everyday desires. The main reason for this is that two different cultures may provide two completely different ways of satisfying a particular desire, let us say for example self-esteem. In one society, one obtains self-esteem by being a good hunter, in another society by being a great healer or a blood warrior, or a very unemotional person and so on.

The human being is a wanting animal and rarely reaches a state of complete satisfaction except for a short time. As one desire is satisfied, another pops up to take its place. When this is satisfied, still another comes into the foreground, and so on. It is characteristic of human beings throughout their lives to be

practically always wanting something. The thesis will introduce another point of view related to the implication of these needs on human behaviour. This implication is relevant to the built environment.

### **3. 2. 2. The Basic Hierarchical Needs:**

The basic needs of the human beings were well illustrated by Abraham Maslow (1954) in his book Motivation and Personality. He suggested that human needs can be arranged in a hierarchal order as follows: (1) physiological needs, (2) safety needs, (3) belonging and love needs, (4) esteem needs, (5) self-actualization needs and (6) cognitive and aesthetic needs. The attempt of this study is to connect those needs to architecture and to show how they, through the final and holistic motivation of culture, influence its development and its processes. Man is motivated by those needs to take action to satisfy them in a hierarchal way from the basic to the more abstract ones and these actions were visualised in the built environment through its perceived quality. The following is a detailed review of these needs:

#### **3. 2. 2. 1. Physiological Needs:**

The needs that are usually taken as the starting point for motivation theory are the so-called physiological drives. Young (1941, 1948) summarized the work on appetite in its relation to body needs. If the body lacks some chemical, the individual will tend (in an imperfect way) to develop a specific appetite or partial

hunger for that missing food element.

Undoubtedly these physiological needs are the most dominant of all needs. According to the Danish psychologist Ingrid Gehl these physiological needs can expand from the priorities of hunger and thirst to the needs of sleep, rest, hygiene, light, air and sun and so on.

Although architecture can not satisfy the necessary hunger and thirst needs, it certainly does for the other physiological needs like warmth, ventilation, sanitation, light and other physical factors. At the same time architecture can have a main role in terms of proportion, texture, colour, and aesthetic consideration. The most important point beyond all this is that there seems to be an overall effect of architecture upon a person's mental health or illness. For example, the damaging physical effect several flights of stairs can have on an elderly person, or the lack of sunlight and ventilation to a room of a bed-ridden patient. These are only a few examples, but hopefully the message is clear. Fulfilling the requirements related to the thermal and climatic conditions in a particular place should be an important priority of the architect.

The study will argue that fulfilling these basic types of needs at present is done with a great sense of cultural and aesthetic dimension. This has been possible following the experience of the 'lower needs' which over time have been incorporated in our holistic cultural experience.

### 3. 2. 2. 2. Safety and Protection Needs:

People want to feel safe and secured within their own homes. A man's house has often been described as his 'castle', a symbol of strength and a fortress. A person will feel secured if he/she can control his own security within the limitations of reality and human potential. Urban areas are planned for masses of people and for fast-moving machines. In this situation often the individual will find it difficult to feel secured or in control of his/her environment. Psychologists believe that subtle frustrations may occur in one's drive for security encountered day after day, as one attempts to adapt to this hostile environment. But exactly what is a 'hostile' environment? The dictionary definition of hostile is, that which is unfriendly or harsh. It is clear to see how, for example, a fifteen-storey apartment block may appear unfriendly. From the ground it seems overbearing and imposing, and sometimes the small deflection of the building from wind loads may create a sense of psychological insecurity.

A feeling of order can help create a sensation of security and turn a hostile environment into one of consistency and value. People generally enter architectural spaces with an expectation that they are capable of being understood; therefore, there is an expectation of order. Traditionally one of the most important functions of architecture has been the creation of visual and functional order. This visual and functional ordering helps people to admire and understand their environment very easily. At the same time that order does not need to eliminate architectural quality or its aesthetic values.

Symbolism in architecture can be used successfully for the creation of feelings of security. For example, devices such as hedges or tall trees can create feeling of enclosure and protection. Safety and security needs also extend to the avoidance of pollution, noise, accidents and traffic safety. Conceivably a demand for a more green environment is required. Investigation into how buildings can affect occupants' health through the use of damaging, polluting materials is a recently modern phenomenon.

### **3. 2. 2. 3. Belonging and Love Needs:**

The thesis's interpretation of Maslow's view here is that the experience of fulfilling both the physiological and safety needs would motivate people to fulfil the higher needs of love, affection and belonging. Love needs to involve giving and receiving affection. When these are unsatisfied, a person will feel strongly the absence of friends, a mate or children. Such a person will hunger for relationships with others in general, for a place in a group or family and may strive with great intensity to achieve this goal.

We have very little scientific information about belonging needs, although they are common themes in novels, autobiographies, poems and plays and in the newer sociological literature. From these we know in a general way the destructive effects on children of moving too often in terms of disorientation; of the general over mobility that is forced by industrialization; being without roots or of despising one's roots, one's origins, one's group; of being turned from one's

home and family, friends, and neighbours; of being a transient or newcomer rather than a native. We still underplay the deep importance of the neighbourhood, of one's territory, of one's clan, of one's own "kind," one's class, one's gang, one's familiar working colleagues. We have largely forgotten our deep animal tendencies to herd to flock, to belong. Any good society must satisfy this need, one way or another, if it is to survive and be healthy, (Maslow, 1954).

Psychologist and author, Martin Bloom, looked at the shaping of each individual's personality in terms of the arrangement of "significant relationships." First with the self, next with an intimate circle of other persons - parents, siblings, other relatives, closed friends; and lastly with significant social structures - school, place of work and so on. Therefore, one sees how relationships and friendships with other people begin to fulfil the need of belonging. Architectural space is significant in its conditioning and control of the interaction between individuals and groups, within families, among neighbours, and through the more casual and accidental meetings which occur between them.

Aldo Van Eyck notices the importance of transitional spaces in creating good interaction, to use his phrase "subtle inter social stimulants," which may ease natural encounters between neighbours and encourage for leisurely conversation. Transitional spaces are often the in-between realm, and spaces, such as approaches and entrances to dwellings. Sheer distance between houses, and the direction in which a house faces, can have an immediate effect on neighbourliness and choice of friendship.



In chapter six there will be further elaboration on the relationship of love and belonging to architecture. In that chapter the study introduces sense of belonging in community life and looks at how this need affects the structure of the settlement.

### **3. 2. 2. 4. Esteem Needs:**

All people in our society (with a few pathological exceptions) have a need or desire for a stable, firmly based and usually high evaluation of themselves, for self-respect or self-esteem and to gain esteem from others. These needs may be classified into two subsidiary sets. First, the desire for strength, achievement, adequacy, mastery and competence, confidence in the face of the world, and independence and freedom. Secondly, we have what we call the desire for reputation or prestige (defining it as respect or esteem from other people). Status, fame, glory, dominance, recognition, attention, importance, dignity or appreciation are needs which have been stressed by Alfred Adler and his followers, and have been relatively neglected by Freud, according to Maslow, (Maslow, 1954).

Satisfaction of self-esteem needs, leads to feelings of self-confidence, worth, strength, capability, and adequacy of being useful and necessary in the world. Thwarting of these needs produces feelings of inferiority, of weakness and of helplessness. The satisfied feelings in turn give rise to the most stable and therefore, most healthy self-esteem which is based on deserved respect from others rather than on external fame or celebrity and unfounded idolisation.

There are many examples of the meaning of self-esteem expressed in architecture. We like to express ourselves and we like the society to know us. We use this principle in architecture also in our personal lives, to paint one's door blue because he/she likes blue. One express his/her self in his/her home, he/she put decoration on the window because he/she wants people to say oh that is Ali's house or Muna's house etc.

In many places, people enjoy personalizing their buildings particularly if the design allows them to do so. On the other hand some building designs would inhibit people from introducing even slight changes that express their desires or personal choices. One cannot for example paint the building or add some feature in the facade for reason of maintaining the original design. He/she has to stick to that design, which may constrain people's desire for self expression or self esteem.

Characteristics of fame, prestige, recognition, success, self-esteem and respect of others, all fall into this category. Daniel Muller said: *"A person's self-concept is shaped to a great degree by his conception of other people's view of him."* Therefore, one can speculate that a person's self-image can generate through his/her social experience, as he/she becomes aware of the expectations and assessments of others. Maslow and Norbett Mintz both believe that the character of the environment has an affect on how people are perceived. For instance, subjects looking at the same things in a beautiful room will act more favourably to them than viewed in an ugly room.

Self-esteem and sense of potentiality can be held to a minimum by people's immediate environment. The lowest class of society finds itself in frustrating and humiliating living spaces. This may be one of the reasons for the violence and hostility which results from dissatisfied lives. The problem of the lower class may be helped and improved by good architecture and planning. This will be achieved by establishing areas of interaction between the classes and removing the feelings of isolation from the wider community. (See the principle of equality in the Islamic community described in chapter six).

Privacy is quite difficult to attain in today's world. Clearly people are very different, some introverted, others extroverted and standards in levels of privacy vary. In some countries one may find some social housing schemes which do not provide intra-family privacy. Children in large families may not find enough space to play or interact. Architects on some occasions may fail to arrange dwellings so that internal spaces offer opportunity for the individual to withdraw and experience recreative solitude. Concern is required for the habitable space between things, corners need not be left useless. For example, a little recess or nook at the back of a room with soft cushions may provide a secluded space for a child. This space becomes identified as his/her own, where he/she can retreat to read or play away from the rest of the family (See Alexander's pattern of alcoves, window place, bed alcove, dressing room etc. in his book A Pattern Language, 1979).

### 3. 2. 2. 5. Self-Actualization Needs:

Even if all these needs are satisfied, often (if not always) a new discontent and restlessness will soon develop. This restlessness will restrict unless the individual is doing what he or she individually feels fitted for. Musicians must make music, artists must paint, poets must write if they are to be ultimately at peace with themselves. What humans can be, they should be. They must be true to their own nature. This need we may call self-actualization.

### 3. 2. 2. 6. Cognitive and Aesthetic Needs:

According to Maslow, this term was first coined by Kurt Goldstein (1939). It refers to people's desire for self-fulfilment, namely the tendency for them to become actualized in what they are potentially. The tendency might be phrased as the desire to become frequently what one idiosyncratically is, to become everything that one is capable of becoming.

The specific forms that these needs will take vary, of course, if at all greatly from person to person. For one individual they may take the form of the desire to be an excellent parent. For another they may be expressed aesthetically, and for still others they may be expressed in painting pictures or inventing things. At this level, individual differences are greatest. However, the common feature of the needs of self-actualization is that their emergence usually rests upon some prior satisfaction of the physiological, safety, love and belonging, and esteem needs.

This is also true if a man/woman participates in designing his/her own house so

that when the house is finished he/she will experience the sense of pride and self-actualization being fulfilled. This will also support the views of sharing in which the community and people participate in the processes of designing their environment. Therefore, they will take on responsibility and main role in deciding the shape of their buildings as well as the surroundings. One may find this in much traditional architecture where sharing and participating contribute a great deal to solving problems or fulfilling the community needs from within.

### **3. 2. 2. 6. Cognitive and Aesthetic Needs:**

The desire to know and to understand, finding knowledge and systematizing the universe, has been considered in part, as a technique for the achievement of basic safety in the world, for the intelligent person, expression of self-actualization. When a person becomes more confident and content within him/herself the world of opportunity is opened to him/her and the appreciation of beautiful things and knowledge becomes more real. On the other hand everyone has different tastes, that is not disputable. Some arises from cultural background, hereditary predispositions or innate biological tendencies. Therefore, what one person believes to be beautiful will vary from the next person. (Maslow, 1954).

There are architectural as well as other values that are shared, carried by many if not most people in a community, a country, or even a part of the globe. These shared aesthetic qualities are an essential part of architectural design. However expressing aesthetic needs in architecture may seem very difficult to achieve. This

is partly because aesthetic quality is complex and holistic and therefore requires a deep and living experience of people's expectations and the way they participate in the collective creation of their own cultural values. Architects require to be in strong contact with their own people in order to be able to understand and respond to their preferences and needs. We may notice that some architects, being aware of the difficult nature of the aesthetic task, may establish their own aesthetic themes which they then express in their buildings. In many such occasions the client is unable to express his opinion on the assumption that the architect is more knowledgeable in his work and therefore the clients will have no role in the production of architecture. On the other hand we find many valuable designs that are the expressions of their society cultural values and therefore people will share with the architects full appreciation of these works.

According to Maslow's Model cognitive and aesthetic needs are the higher and more important ones, because they are very highly sophisticated. The implication of this in architecture can be observed very easily. For example at home when people fulfil the basic needs such as those related to climate, protection and the like they achieve these always in an aesthetic way. For example when houses in some areas of the world are built from mud, they usually dry out and cracks are seen everywhere particularly due to the sunheat. The inhabitants' answer to this unpleasant phenomenon is to carve decoration or patterns, borrowed from natural or social features in their own setting, in order to hide the cracks. This will lead people to experience the aesthetic appearance of their dwellings rather than the practical reasoning of these decorations.

This simple example provides an evidence of a strong link between the lower basic needs and the higher dimensions of the aesthetic experience. Such a link has to be acknowledged in architectural designs so that the aesthetic quality would be appreciated by people for expressing their values and needs.

### **3. 2. 3. Preconditions of Basic Needs:**

There are certain conditions that are immediate prerequisites for the satisfaction of basic need. Freedom of speech, freedom to do what one wishes if no harm is done to others, freedom to express oneself, freedom to investigate and seek information and freedom to define oneself, justice, fairness, honesty and orderliness in the group, are examples of such preconditions.

### **3. 2. 4. Hierarchy of Needs:**

According to Maslow most peoples' responses demonstrate this hierarchy of needs although there have been a number of strong exceptions. Our needs usually emerge only when more pre-potent needs have been gratified. Thus, gratification plays an important role in motivation theory. A part from this, however, needs cease to play active determining or organizing role as they are gratified.

What this means is that, for example, a satisfied person no longer needs esteem, love, safety, and so on because he/she has them. The only sense in which he



or she might be said to be still wanting is in the almost metaphysical sense. If we are motivated by an immediate need, once it is satisfied, it will no longer control or motivate us. The physiological needs when unsatisfied, dominate the organism, pressing all capacities so that they may be most efficient in this service. Relative gratification submerges them and allows the next higher set of needs in the hierarchy to emerge, dominate and organize the personality. So that instead of being, for example, hunger obsessed, it now becomes safety obsessed. The principle is the other set of needs in the hierarchy (i.e.love, esteem, and self-actualization) will emerge one after another until all of them are satisfied, (Maslow, 1954).

### 3. 2. 5. Instinct Theory:

Instinct theory accepts the fact that humans are self-motivated; that their own nature and their environment help to decide behaviour; that their own nature supplies them with a ready made framework of ends, goals, or values; most often, under good conditions, what they want is what they need *"what is good for them to avoid sickness; that all people form a single biological species; that behaviour is senseless unless one understands its motivations and its goals; and that organisms left to their own resources often display a kind of biological efficiency, or wisdom, which needs explaining."* (Maslow, 1971).

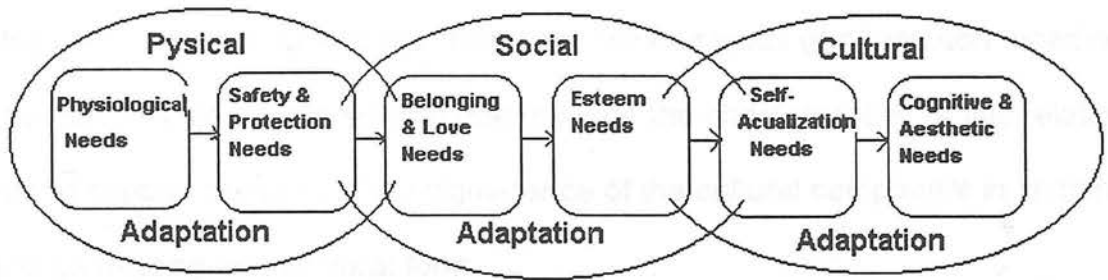
The basic needs arrange themselves in a fairly definite hierarchy by relative potency. Thus the safety needs are stronger than love needs because they

dominate the organism in various demonstrable ways when both needs are frustrated. In this sense the physiological needs (which are ordered in a sub hierarchy) are stronger than the safety needs, which are stronger than the love needs, which in a turn are stronger than the esteem needs, which are stronger than the need for self-actualization. We share the need for food with all living things, the need for love with the higher apes, but the need for self-actualization with nobody. The higher the need the more specific to humans it is.

### 3.3. Adaptation Process as a Function of Individual and Social Environment

The theory of the adaptation process is based on the assumption that the individual is a social being. The individual is not only a biological entity but also a social entity. The individual is a member of a social group and is influenced by the social environment. The social environment is a complex of social relationships and social norms. The individual is a member of a social group and is influenced by the social environment. The social environment is a complex of social relationships and social norms. The individual is a member of a social group and is influenced by the social environment. The social environment is a complex of social relationships and social norms.

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**Figure 3.2:** The relationship between the adaptation process and the hierarchy of human needs.  
(Source: The Author.)

### 3. 3. Adaptation Process as Theoretical Approach (Hypothesis):

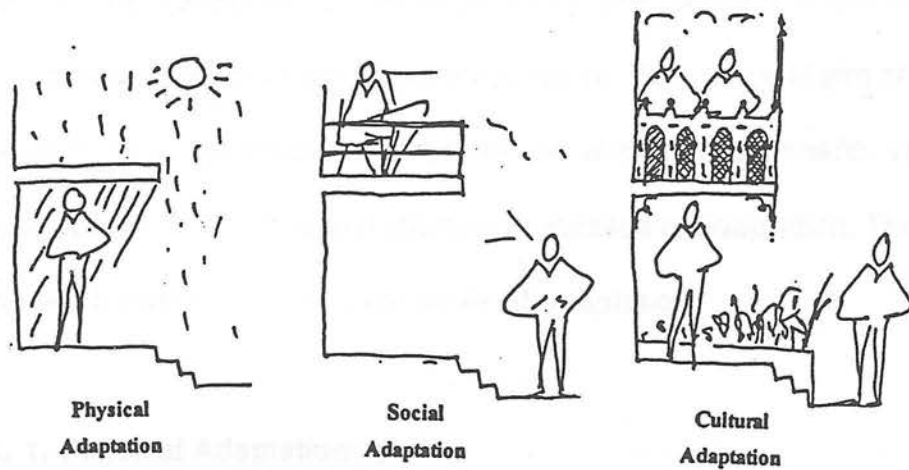
The thesis at this stage comes forward with a hypothesis which sees the phenomena of adaptation processes as consisting of three hierarchical levels, physical adaptation, social adaptation and cultural adaptation. The basis for this hierarchy is the interconnection between the motivation and adaptation processes (see figure 3.2). On one hand the environment is seen to respond to the individual needs. On the other hand responds to the collective perceptions of the society's needs as a whole. The result is that there would be a kind of correspondence between both the individual and the societal motivation systems which the thesis argues to be important in setting out a basis for aesthetic understanding. However the thesis will present in chapter four a model to elaborate on the system of interaction between these two phenomena of motivation and adaptation. Before doing so the study will introduce in the following section the hypothetical hierarchy of the three levels of adaptation.

It is worth mentioning that most literature on adaptation has tackled the notion of adaptation in a rather unconnected way and therefore there has been no clear idea about the relationship that ties these various kinds of adaptation together. The objective of the model is to demonstrate the characteristics of this relation and to support the idea of the significance of the cultural component in shaping and generating architectural form.

### **3. 3. 1. The Three Levels of Adaptations:**

In response to the hypothesis put forward in the previous section, the thesis now attempts to introduce the three levels of adaptation. Further examples will be given in various other forthcoming sections of the thesis to illustrate the implications of these levels on architectural design as well as other aspects of culture. The first level concerns the adaptation to the physical environment which is primarily for the provision of protection against the various physical forces. The second level concerns the adaptation to the social environment and how to live in a social group so to adapt to the rules and norms which govern the society. The third refers to cultural adaptation which is concerned with responses to the various aesthetic and symbolic values that a society evolved over time and which are mediated by language, rituals and traditions. The best demonstration of this concept is achieved through the diachronic analysis of the early settlements which emerged in the different parts of the world.

It is useful to cite a simple example to illustrate this concept. In many arid



**Figure 3.3:** The three levels of adaptation in the evolution of a balcony.  
(Source: Sketches by the Author.)

countries, people build canopies projected over the main entrance of their houses in order to provide shade and protection from the heat of the sun, 'physical adaptation', see figure 3.3. Later people developed a new use for this canopy in the form of balcony. They can sit and watch their children playing in the street, they socialise with their neighbours or even purchase their vegetables and meat from the grocer underneath 'social adaptation'. Further development may occur which would attach significance to the balcony as a symbolic and aesthetic feature. This can be seen with the addition of ornaments, and styles of flowers and plants to express the status of the family 'cultural adaptation'. Therefore, what started out as an element for protection against physical conditions has become a strong and very popular architectural feature mediated by social utility. Balconies take a variety of forms and shapes and can have different decorations which are inspired by indigenous features such as plants, figures or formal geometries.

It is important to know that the actual appreciation of the balcony could be

attributed to the variety of its meanings which are inherent in the form of the balcony and which people unconsciously perceive. The principal aim of this thesis is to assert that architecture acquires its authentic aesthetic value from corresponding to the various evolutionary processes of adaptation. The following is further elaboration on the three levels of adaptation.

### **3. 3. 1. 1. Physical Adaptation:**

In this level the prime concern is directed towards making arrangements to respond to the various elements as well as the external physical forces that exist in a particular place. These arrangements aim at maintaining a comfort and a balance between human body and nature's characteristics. The result of these adaptive processes is the evolution of **Shelter** which is the expression of man's understanding of the local resources available in his/her particular environmental setting. The shelter and the basic layout of the settlement would then be socially adapted.

### **3. 3. 1. 2. Social Adaptation:**

This level defines a system of rules, norms and patterns of social behaviour which could be seen as a conscious social adaptation to the primary physical structure of the settlement which had initially developed in response to the natural and physical environment. On this level the prime concern is directed towards establishing the relationship between the individual and his group so to maintain

a sense of harmony and co-existence through these rules.

Privacy, personal space, territorial behaviour, territorial ownerships and community relationships are evolved as systems expressing a social consensus regarding shared values and concerns for the survival of the community through obeying these norms of conducts and behavioural rules. The constellation of these social and community systems would then define the characteristics of the concept of **Habitat**.

### 3. 3. 1. 3. Cultural Adaptation:

It is suggested that the embodiment of all values which emerged through both the social and physical adaptations would be achieved in the cultural context. This is the media for abstraction of those values and norms which are the main subject of arts, symbolic rituals and the semantic structure of languages. This would suggest that cultural adaptation is holistic and therefore, could be seen as the actual interpretation of environmental and practical factors that are expressed in the more abstract forms and elevated style of art and architecture. Cultural adaptation would also be the basis for people's attachment to their place and therefore the perception of its spirit this would define the **Genius loci**.

The process of adaptation in the field of architecture is motivated by the hierarchical order of human needs which provide in the end the basis for the interrelated levels of adaptation. All processes are expressed visually and

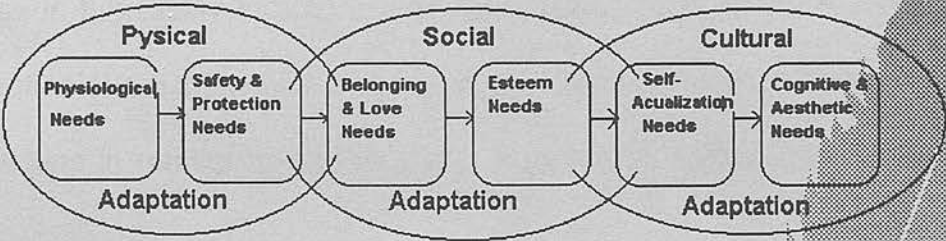


spatially in the built environment. One stage would come in to existence as a result of the fulfilment of a set of needs related to particular motivation hierarchy. This would lead to further adaptation that is needed to be achieved in order to move further in the hierarchy. This has been stated as the contribution of this study which sets up a concrete justification for both the motivation model as well as the transcendental links among the different levels of adaptation.

At the same time the study claims that these levels are the source which the concept of culture as a whole comes from. In reality we do not see these levels separated but we respond to the totality of the environment as a holistic entity which embodies these values collectively in the form of culture. It is also important to know that each adaptive level produces its own aesthetic characteristics which usually stems from the subject of adaptation such as nature in case of physical adaptation or the social context in the case of social adaptation further elaboration on these notions will be introduced in chapter eight.

CHAPTER FOUR

AN ADAPTIVE MODEL FOR ENVIRONMENTAL PROCESSES  
(Application in Architecture)



## CHAPTER FOUR

# AN ADAPTIVE MODEL FOR ENVIRONMENTAL PROCESSES

(Application in Architecture)

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### 4. 1. Introduction:

Researchers usually use a method when working, therefore having introduced the theory of adaptation and the motivation of human needs and their relationship to the built environment, it is important to introduce a model, which is the result of these theories and how they interact. The model is in fact the empirical side of these theories. It explains the simplest way to practice and examine these theories in the reality of architecture and urban design. It will be useful to give information about the nature and use of models in general and to briefly examine their values in relation to theories and hypotheses before introducing our own one.

Theories, hypotheses, and models are tools to study the relationships among concepts, factors or phenomena. They can be viewed either in very complex or in rather simple ways. According to John W. Berry (1976) the simplest and clearest statement about how these notions relate to each other is the one by Marx and Hillix, 1963. For Marx and Hillix, theory is an abstract formal statement to which there are appended rules for manipulating declarations and definitions

that relate them to the empirical world. They may be established either on the basis of empirical observation or as a result of rational analysis. Hypotheses are specific empirical predictions which may be derived from a theory and whose accuracy may be checked by empirical observation. On the other hand models for them constitute a particular a subclass of theory and so may also lead to hypotheses.

One way in which models are thought to differ from theories is in the degree of contact they have with the empirical world. Theory is that which provides "general guidelines" while models provide "specific guidelines for empirical research". Coombs et al. (1970) have extended this idea, noting that theory provides the interpretation while a model provides the structure. Guetzkow et al. (1972) argue that a theory contributes explanation while a model contributes representation.

According to Rapoport, there are two types of model, descriptive and predictive (Rapoport, A. 1963). The descriptive model is an empirical description of extant relationships and is employed to gain insight into multiple relationships among sets of data. On the other hand the predictive model employs some empirical description to predict other empirical relations and approximates the traditional use of the hypothesis.

The model introduced by this thesis, in this matter, is both descriptive and predictive because it has characteristics of both types. The model presented here consists of five components or variables, they are: nature, resources, built form,

social behaviour, and culture. But before illustrating the model in more detail it is useful to draw the reader's attention to the fact that it is in the nature of this model to elaborate on the relationship between adaptation and motivation theories as these both developed in two different disciplines. The study contributes to this by drawing an analogy in order to discover the parallels between these two notions and how they impinge on the environment and human culture.

#### **4. 2. Parallel Between Adaptation and Motivation**

During the early evolution of man, features that accompanied this evolution still effect people's perception and needs (Kaplan, 1987). In other words, needs and motivations are seen to be conditioned by the images people preserve in their mind about natural features and physical qualities inherent in the place they live in. This thesis asserts that the study of theories of adaptation and Maslow's motivation model is necessary to show that the link between the ecological environment and human motivations are vital; these can be very useful tools to set practical measures for the compatibility of built environment.

Adaptation and motivation are two notions which are strongly linked together. Such links will be established when studying how the varied needs have prompted people to develop a creative architecture through the adaptation processes to fulfil and transcend human motivations and expectations. It is important to restate that adaptation is a dynamic process, while motivations behind this process represent a 'natural stimulation' inherent in human nature.

Such stimulation has a hierarchical order. This hierarchy is expressed in the varied degrees of aesthetic experience and preference to the built environment that people demonstrate in their every day life. In

The Processes of Adaptation to The Environment	Relevant Features	Architectural Manifestations	Motivation of The Basic Hierarchical Needs
<b>Physical Adaptation</b>	Climate, topography, resources etc.	<b>SHELTER</b>	Physiological Needs Safety & Protection Needs
<b>Social Adaptation</b>	Privacy, rituals, set of roles etc.	<b>HABITAT</b>	Belonging & Love Needs Esteem Needs
<b>Cultural Adaptation</b>	Collective subconscious, beliefs, religions, perception, ethos, myths etc.	<b>GENIUS LOCI</b>	Self-Actualization Needs Cognitive & Aesthetic Needs

**Figure4.1:** The relationships between adaptation processes and motivation of basic human needs. (Source: The Author)

other words hierarchy of the environment structure is the result of hierarchy of human needs and motivations. Although these needs are personal, people express them and the feeling associated with them in a rather collective way. This collectivisation is very well expressed in Architecture as well as in Art, Language and all other Artifacts.

According to Maslow (1954 & 1987), there are six motivations, the first two are more basic and relate to biological and physiological factors such as thirst, hunger, safety, thermal comfort and protection. Others are less basic and may interpret the human tendency towards abstraction and aesthetic experience such as belonging, self esteem, self-actualization and cognitive and cultural perceptions.



Motivations are set according to a hierarchical order, from the most basic to the most abstract. In other words when a person is in need of food or protection, he/she is unlikely to be engaged in matters of belonging or aesthetic

Cognitive & Aesthetic Needs Self-Actualization Needs			GENIUS LOCI
Esteem Needs Belonging & Love Needs		HABITAT	
Safety & Protection Needs Physiological Needs	SHELTER		
Motivation of The Basic Hierarchical Needs The Processes of Adaptation to The Environment	Physical Adaptation	Social Adaptation	Cultural Adaptation

Figure4.2: The types of built form in each stage.  
(Source: The Author)

appreciation. When basic needs are met then man is motivated by further needs higher in the hierarchical structure of this proposed model.

The study of the relationship between adaptation and motivation is vital as mentioned above, to set a concrete understanding of architectural phenomena and to assess the relevance of the various approaches and practices that collectively define the contemporary discourse on architecture. The model asserts the significance, to our architectural thinking, of studying the structural links that exist between the high forms of architecture and the underlying forces of human evolution through the processes of adaptation and motivation. The architectural discourse will benefit from seeing behavioural patterns, activity types, spatial relations, forms as well as choices of materials, decorations and means of self



expressions as forming a holistic cultural system.

Before drawing on the parallel between adaptation and motivation, it is important to know that the linearity of adaptation processes which exists in this study is the expression of the tendency to move from simpler to more complex forms which characterises human mind. At present people's perception and response to any phenomena are determined by the totality of characteristics from the various levels of adaptation. This in fact draws on the holistic nature of culture which is a collective language of sharing and communicating historical continuity. It follows that barriers between different forms of responsive behaviour or social and personal preferences and attitudes do not exist only for purpose of some kinds of specialised investigation. Architectural theorisation should be based on such a holistic vision in order to avoid the consequences of fragmentation on people and their environments.

#### **4. 2. 1. First Stage: Creating (Shelter).**

Responding to physiological and safety & protection needs.

As has been stated above designs are now generated by cultural values. These are the accumulation of characteristics that man developed during his responses to the various environmental and social conditions. Other features are also preserved by culture which relate to fulfilling human needs and motivations. The thesis demonstrates in the following sections how these characteristics have developed and eventually incorporated in our cultural perception of built form.

During adaptation to the physical characteristics of the natural environment, climate, topography, natural resources, environmental threats and man's physiology, man is likely to give priority to fulfil his needs for protection, security and thermal comfort. It is possible therefore to associate basic motivations with adaptation to physical environment. The result of this association would lead to the development of the concept of **Shelter**. This applies both to the design and characteristics of the single dwelling as well as to the layout of the native settlement. Many features associated with this phenomenon are still preserved in the architecture of vernacular as well as other type of designs such as the fire place, the different types of roof, window, wall and the like. One should note that major consideration is given to necessities that provide physical environmental comfort, by benefiting from sunlight and proximity to natural resources. However living together in such native settlements would lead to the need for laws and accepted norms to monitor and maintain equal rights and safety for all the population. This would be achieved through the establishment of social customs, rules, norms, rituals, regulations and the like. People have, as a result, to adapt to these social systems in order to avoid clashes and conflicts which may threaten the community.

The primary responses to and the awareness of the impact of environmental conditions resulted in certain fundamental principles which led the evolution of the prototype forms as the embodiment of these characteristics and the consequent social and behavioural patterns. For example, the courtyard house is a prototype which developed in response to a number of conditions relevant to particular

geographical areas. The architectural form of the courtyard house has facilitated certain social opportunities and behavioural patterns to take place and to form the social and cultural context of the population.

It is important to know that this architectural prototype of the courtyard has persisted over very long period of time, although with certain variations it has been introduced into different cultures with slight variations due to the microclimatic conditions. The principal form was initiated as a primary response to the natural conditions, however, it remained unaltered maintaining the same time the unique social environment which was born as a result of social adaptation to the house type and its surroundings.

The different forms seen in the different parts of the world can be easily explained as a conscious awareness of the impact of the natural environment and their social associations. The typology incorporated also the social and cultural phenomena that together set up the identity of that place which symbolises in the same time a balanced and harmonious relationship between people and their built environment. In this stage the concern was with creating **Shelter** from available materials.

#### 4. 2. 2. Second Stage: Creating (Habitat)

Responding to belonging & love and esteem needs.

Adaptation to the social environment is a process where man meets the requirement to adapt to other members of his community through the expression of love, sense of belonging and self esteem motivations. The association of social adaptation with these motivations would then lead to the evolution of the concept of **Habitat**; a place of communal living where a strong sense of social belonging is a dominant phenomenon which ties people together in an atmosphere of collective support and social responsibility. Shelter can be the work of a single person, settlements can only result from the co-operation of groups of people; their origin is social and cultural.

In this phase, however, the society becomes more aware of possible conflicts between the various members of the population. In order to resolve these problems, the society consciously applies a set of rules of conduct and beliefs in order to maintain a sense of responsibility and order. It is possible then to assert the importance of these traditions in the life of the different cultures and in maintaining strong bases for self esteem and belonging. In this stage the concern is with creating **Habitat**, whose characteristics together with those of shelter would then be incorporated in the overall cultural structure.

#### 4. 2. 3. Third Stage: Creating (Genius Loci).

Responding to self-actualization and cognitive & aesthetic needs.

Eventually adaptation to culture signifies the satisfaction of self actualization and cognitive and aesthetic motivations. Cultural adaptation provides a holistic framework within which the whole society perceives the quality of life as an expression of all the values shared by people and which includes those related to the previous levels of adaptation. The associated concept would then be found in a spirit of place or **Genius Loci**, a place which fulfils all human needs. While the term Genius Loci here confirms that which was developed by Chistian Norberg-Schulz in his book Genius Loci (1980), it also connotes a sense of time associated with the processes of evolution. The study will argue (chapter eight) that the best way for understanding the phenomenon of place can be achieved through the diachronic analysis. In other words we consider place as a living organism which is the result of the layering of meaning shaped by the different motivations and different adaptations and communicated to the new generation through aesthetic experience and symbolic and value systems.

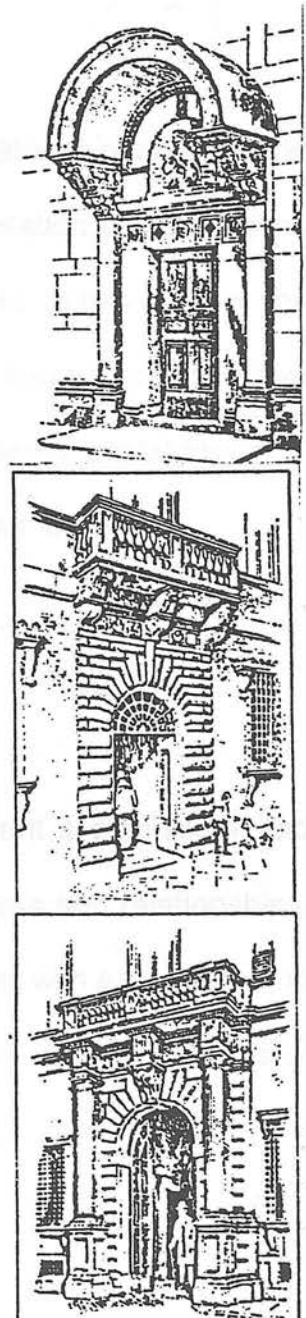
The fulfilment of people's longing for beauty and aesthetic enjoyment can be seen as high human motivations. Such longing was achieved in the traditional cultures through freedom of expressions in art, decoration and other symbolic features. The desire to know more and to improve the quality of life was achieved by the accumulation of past knowledge through inheritance from generation to generation, reaching the highest level of human cultural achievement of cognitive styles and aesthetic and symbolic values distilled from the different levels of

human needs and motivations.

There are, however, numerous examples showing the achievement of the higher levels of architectural aesthetic quality through the layering of the features belonging to the different levels of adaptation and motivation.

For instance, in many parts of the world particularly those with hot sunny climates, a balcony forms an important architectural feature, see figure 4.3 and also figure 3.3. There is however a history for this aesthetic element. The necessity to provide protection from the heat of sun and to symbolise and mark the entrance, people felt the need to project a canopy for this purpose. This eventually was converted to a balcony to allow people to stand and enjoy watching the community or children in the outdoor spaces. Many people use these balconies for other purposes such as working, sleeping or having a pleasant time.

As mentioned above this element as well as many others have been widely used in the history of architecture as an aesthetic phenomena and are still very important in the setting up the identity of many regions or countries (see chapter eight).



**Figure 4.3:** Development of canopy to balcony. Italy. (Source: B. Fletcher 1924 [A History of...](#))

The aim is to convey a message about the contribution of the various levels of adaptation to architectural meaning. Another aim is to establish the links between human evolution and architectural aesthetics and symbolism. The study argues that numerous architectural components and features have a similar history that ought to be explored and understood, therefore maintained in the architecture of the different cultures.

Motivation deals with responses to psychological issues related to people and the way they view the environment, on the other hand adaptation deals with the interpretation of these issues in the environment as a whole. In this respect the study argues that architectural prototypes would embody these forces and that these forces provide the origin of the architectural characteristics and forms. In this stage the concern was with creating a sense of **Genius Loci**.

#### 4. 3. The Components of the Model:

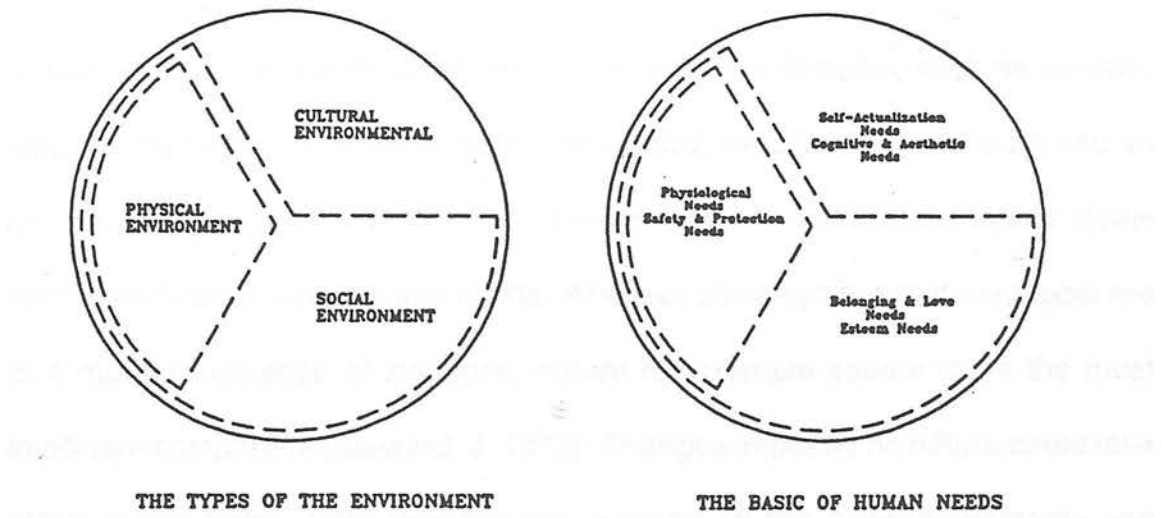
Perhaps the best way to introduce the model is to present it graphically and describe it verbally in terms of its major overall components and relationships. There are five major components of the model, they interact with each other and through the principle of adaptive process they produce the appropriate type of built form suitable to its time and place. From these interactions there are twenty one major establishable relationships to be discussed.

Culture and social behaviour variables are considered to be in a process of

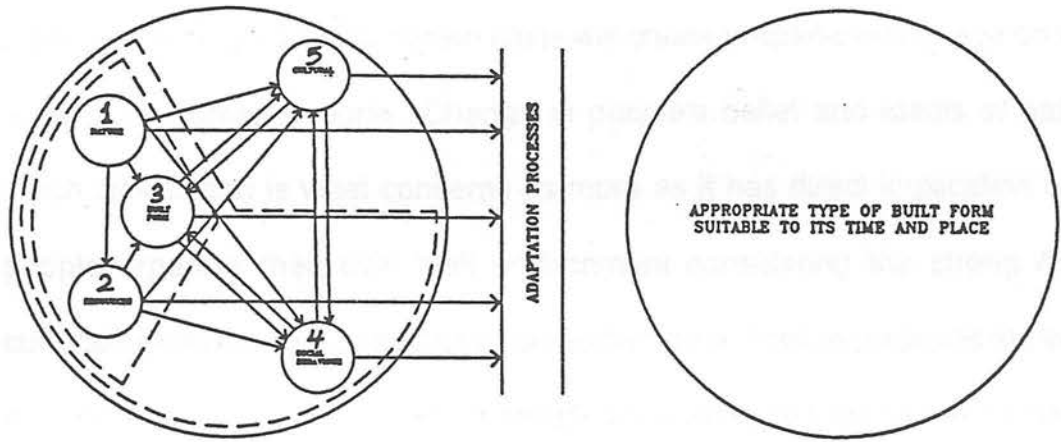


harmony with nature according to the school of Cultural Ecology. They are also seen as being engaged in processes of reciprocal exchange of influences with the physical structure of the settlement particularly in many traditional built forms. They are also affected by the local resources and ecological systems. It should be emphasised that the relationships between the different variables (components) of the model are probabilistic, not deterministic. However, in a more extreme environmental setting these relations may be stronger due to limited choices on the cultural and behavioral forms which may emerge.

Both the social behaviour and culture components were initially seen as inseparable. But for the sake of a more detailed study, culture is seen as more comprehensive though it incorporates behaviour as a visible component which reflects the set of values and belief system of culture. In other words, culture extends over time and could be understood through the study of its history and evolution. Behavioural patterns on the other hand can be used to study the underlying structure of culture itself and how people's behaviour might be affected by every day life, new technological discoveries and also influence coming from other cultures. The following is a review of these components and their relationships.



**Figure4.4:** The types of the environment in relation to the basic of human needs.  
(Source:The Author.)



**Figure 4.5:**1.Nature; 2.Resources; 3.Traditional Built Form; 4.Social Behaviour; 5.Culture.  
An Environmental Model of Adaptation and Motivation (Source:The Author)

#### 4. 3. 1. Nature:

Nature consists of infinite phenomena and physical systems such as climate, weather, rainfall, temperature, wind, topography, landscape, vegetation and so on. On the other hand nature exists through people's interpretations and ideals taking the form of symbols and myths. Whereas all components of the Model are in a mutual exchange of influence, nature for example seems to be the most important component (Steward, J. 1972). Changes imposed on nature could take place in two forms. First changes are imposed on the physical elements and features of nature. These may have serious consequences such those related to pollution, Ozone depletion, extinction of species and the like. These usually rapid changes may not be the result of culture but of the economical activities and other exploitive endeavours. Although nature resists any change which may disturb its cyclic metabolism due to the phenomena of homeostasis, some changes which go beyond certain limits will create irreparable damage on nature as well as human integrity. Change in people's belief and ideals of nature is much slower and is what concerns us more as it has direct implication on how people organise their own built environment considering the strong role the cultural beliefs have on shaping human settlements. *"nature prepares the site and man organizes it to enable him to satisfy his desires and his needs."* Vidal de la Blache, (cited by Rapoport, 1969, p.29)

However, the general view is that changes both in the ecological systems of nature as well as our thought and beliefs of nature, will lead to changes in the

status of the other components which would also affect balance in the system. Perhaps the best place for these ideas would be the thoughts and practices of the School of Cultural Ecology which offers a thorough and concrete relationship of nature to the various human aspects including technology, social values and economical structures ( Steward, J. 1972).

#### **4. 3. 2. Resources:**

Researchers are right in considering this component as part of nature, but the study has chosen to separate them into two components because the resources component on its own has an important role in influencing the other components. This is due to the variety of different resources in different parts of the world afforded by nature.

Resources are what nature affords us (e.g. materials, conditions, etc.) and all other features (economical, technological etc.) which help human beings to solve their problems with the environment. In this matter, resources had a priority in shaping and effecting the development of the other components. It is possible to assert that the availability of certain types of resources existed in a particular area are responsible for establishing a distinctive economical structure which would result in certain social patterns being developed. It is usual therefore, to find out that other components are adapted to these natural resources. This topic has well discussed by The Theory of Affordance put by James J. Gibson (1979).

*"The natural environment offers many ways of life and a way of life is a set of affordances that are utilized...The affording of life by the environment is presumably of unlimited richness and complexity. The physical, chemical, meteorological, geological and geographical conditions of the surface of the earth, and the preexistence of plant life, are what make possible animal life...The environment affords many different kinds of food and many different ways of getting food. It affords various sorts of preexisting shelters or places to hide, in holes, crevices, and caves, and various materials for the making of shelters such as mounds, nests, and huts. It affords various kinds of posture like floating, clinging, resting, and standing, and various kinds of locomotion like swimming, crawling, walking, climbing, and fling."* (J. J. Gibson, 1979, p.69)

We are then attracted by resources afforded to us by the environment as we need them. As Koffka argued, the postbox has a "demand character" only where the observer needs to mail a letter. He is attracted to it when he has a letter to post, not otherwise. The value of something is assumed to change as the need of the observer changes. But the affordance of something does not change as the need of the observer changes, it is always there to be perceived. The organism depends on the mutual interaction with its environment for its life and both depend on each other for existence, (J.J.Gibson, 1979).

If there are many resources available at the site the choice then is related to

cultural preferences. *"For example, houses in the west Valais area of France are of stone while those of the east Valais are of timber, although both materials are equally available in both area."* (Rapoport, 1969, p.109)

Surfaces afford posture, locomotion, collision, manipulation, and general behaviour. Special forms of layout afford shelter and concealment. Fires afford being warmed and being burned. Detached objects, tools, utensils, weapons, affords special types of behaviour to primates and men. The other animals and other people provide mutual and reciprocal affordances at extremely high levels of behavioural complexity. (J.J.Gibson, 1979).

#### **4. 3. 3. Traditional Built Form:**

From the early years onwards man has created and developed building forms out of the available resources in accordance with his various needs and necessity for protection against all sort of pressures and extremes of weather and the physical conditions. The early and simple forms of shelters are found to be the optimal outcome of the various properties of the local resources including materials and technologies. The constructional forms and elements of these shelters and the skills gained from practising them were transferred from one generation to the other through the movement of knowledge.

Human adaptation to environment is the first stage of life, provision is made for protection against animals and against physical dangers. The settlement pattern

is shaped by orientation to basic economic resources of nature and also by arrangement to embody various relevant activities. All the primary problems of human beings are solved for the individual by artifacts, organization of co-operative groups and adaptive behaviours to meet the communal interest with specific vernacular tradition.

The builders or craftsmen made every effort to ensure the exact function and performance of those traditional prototype forms, even when adding little improvements or changes from their own imaginative skill. This copying is usually found now both in industrial countries as well as the vernacular societies. In such cases, there is a great measure of social stability and considerable conservatism in the method of the designers and craftsmen; stabilities which are further reinforced by tradition (P.Steadman,1979). Steadman's idea is that the study of the history of the development of tools reveals principles or methods which might be applied in modern practices. Such is the case for example in the UK where building has returned to extremely vernacular and traditional house form. Steadman attributed the failure of recent architectural and industrial design precisely to the collapse of the vernacular tradition and the disappearance of handicraft methods, phenomena which themselves had been brought about by industrialization and by rapid changes both in public taste and in the patterns and requirements of domestic and social life.



#### 4. 3. 4. Social Behaviour:

When societies practice cultural meaning in their daily life, this practice is expressed in the social behaviour. Therefore, social behaviour is conditioned by and interrelated to culture through its value system, privacy, rituals, aesthetic perception and the like.

However, one may suggest that in particular places the archetype patterns which include building articulation, choices of materials and types of structural elements i.e. columns, walls, arches, etc. are supportive to certain patterns of behaviour characteristic of the culture of the group. A good example is the case of the Middle Eastern city where proximity and strong social ties are supported by the compactness of the structure of the city.

*"It is implicitly accepted that there is a link between behaviour and form in two senses; first, in the sense that an understanding of behaviour patterns, including desires, motivations and feelings, is essential to the understanding of built form, since built form is the physical embodiment of these patterns; and second, in the sense that forms, once built, affect behaviour and the way of life..... The question, in effect, is concerned with how changes in culture, expressed in behaviour, relate to changes in the environment, as shown by physical form"(Rapoport, 1969, p.16).*

In this matter one has to consider the underlying factors when one comes to understand the social structure, social institution and social behaviour of a particular group of people in a certain setting. An examples of this is the issue of privacy in the Islamic society and the effect it has on human behaviour and on organising places inside buildings and homes.

All spaces are different in scale and size etc. A society which needs space to gather and perform a cultural ceremony for example, will wish to create a large space for this need. This big space will be exposed to the sun, therefore, something has to be done to give it intimacy of the human scale, and protection. This may be solved by the planting of trees to invite people to sit under them. The meaning of the tree develops into not only a device to produce shade, but also a symbol which helps give social identity to the place. It also becomes a landscape, or an aesthetic element.

#### **4. 3. 5. Culture**

Despite the increase of interest in culture, it remains an ambiguous term. It has been discussed in countless books, articles and research work yet there is still lack of agreement about it's meaning and origin.

Culture is a term which describes other things such as symbolism, myths, spirituality, schematic perception, values, and meaning etc., produced in certain patterns that we call culture. There are other features which are part of culture

but may be seen as separate components in themselves. These are acculturation, ideology, religion and ecology. For this study, these are inseparable elements which have fundamental roles in culture.

Man through culture is adaptive to the environment as it offers knowledge and skills acquired to meet needs within their physical conditions. These can be seen as devices to take advantage of local sources as well as to secure protection against hazards. Therefore, the cultural system is argued to be an adaptation to all factors of the environment, and in turn an influence on social behaviour. Within culture, the socio/cultural context and socialization have been viewed as interrelating variables, which are all in an adaptive relationship forming the structure of the environment.

Culture consists of three sub-components: the visible one which includes rituals, ceremonies, habits, building activities, spatial systems, crafts, tools, art, etc. The second sub-component is the invisible one which includes beliefs, rules, perceptions, preferences, feelings and sentiments, etc. The third is the cultural core which defines the essence of culture. The core consists of a set of genetic/adaptive instructions which are responsible for culture reproduction and continuity, and also cultural evolution (J. Steward 1972). Part of the core characteristics is the phenomenon of homeostasis which refers to the capacity of culture to regulate its internal system and maintain its stability in the face of external disturbance.

#### 4. 3. 6. Relationship Between Components:

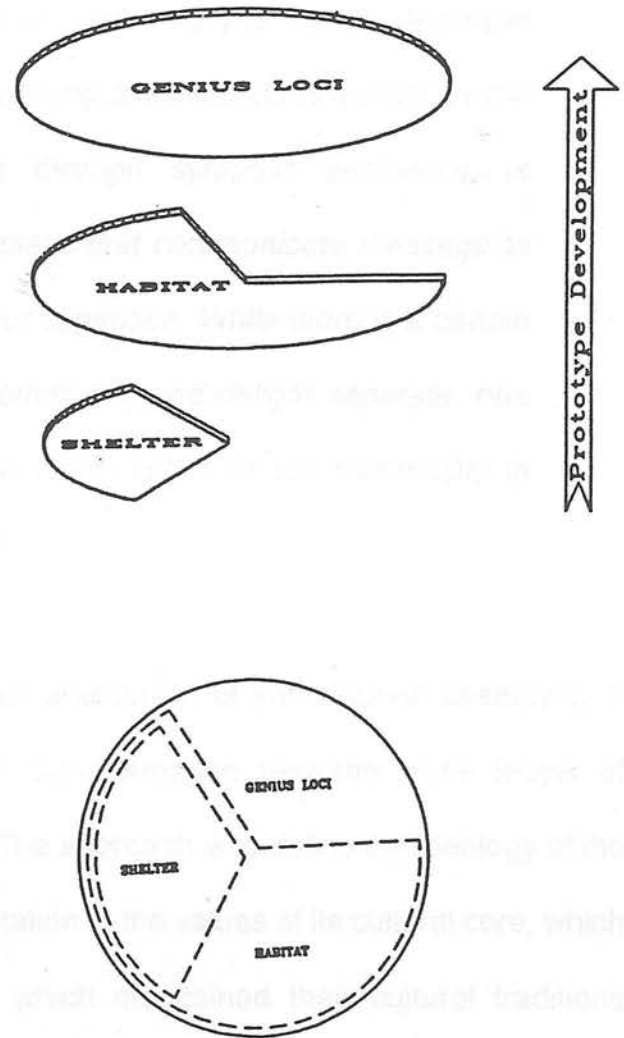
The main aim of this model is to introduce a predictive approach in architectural knowledge, based on adaptive processes between all components that normally characterise authentic solutions of the vernacular traditions. This is seen as a result of the adoption of the principles and values which are rooted in the basic human needs and motivations.

The mutual interaction among these components is well illustrated by the influence of each component on the others and how they affect each other. Therefore, with the exception of the permanent components (nature, resources), a change to one component may result in a change in the others characteristics. For example, the acquisition of new technology or way of production may lead to some changes in the social behaviour and informal social institutions. These would be incorporated in the long term to the cultural context. However culture will remain the dominant factor which initiates social institutions and social organisations and built forms which express and embody the society's aesthetic and ideological achievements.

All these interactions between components and through the principles of adaptive process and motivation of human needs, will lead to the development of an appropriate type of built form. This built form is suitable to the area and to the time in which this type occurs. Consequently, every place will have its identity and its type of architectural forms which are generated by culture.

#### 4. 4. Summary:

Human desires include the need for identity, the provision of security, the need for self-expression, and more broadly, the aesthetic function of architecture. This implies an understanding of man as a biological, psychological, social and cultural being. The study argues that it is inappropriate to separate higher needs e.g. the cultural and aesthetic from the basic ones e.g. utility and functional. This separation will bring about fragmentation in architectural thinking such as those related to the distinction



**Figure 4.6:** The development of prototype from basic Shelter to Genius Loci. (Source: The Author)

between form and function which has prevailed for some time. For example focusing on function would advocate minimalism and reductionism which would discard many salient aspects of architectural quality that have been appreciated by people for their significance. Design is not necessarily an expression of a concern to fulfil the basic needs but should also embody the fulfilment of the

higher motivations of the cultural and aesthetic experience. J. Lang stated that:

*"Separating commodity and delight seems to imply that delight serves no fundamental purpose. This simply is not so. Aesthetic functions must be perceived among other functions served by the physical environment. It is through symbolic aesthetics, in particular, that we create displays that communicate message to others about ourselves and our aspiration. While there is a certain analytical utility in keeping commodity and delight separate, one must recognize the delight in commodity and the commodity in delight." (J. Lang, 1987, p.23).*

The model is based on this important articulation of architectural aesthetics. It embodies the process of adaptive transformation between three levels of physical, social and cultural factors. The approach is to define the ideology of the society which emerges from its adaptation to the values of its cultural core, which is a balanced structure. Societies which maintained their cultural traditions produced strong bases for sustainability due to the balance created by the various aspects seen as forming a process rather than defining a product.

The aim of the Model was to introduce the hypothesis on the link between adaptation levels and human motivations as a tool for understanding architectural phenomena. The study aims to provide support to this hypothesis drawn from different sources. In chapters five, six and seven the support will be drawn from

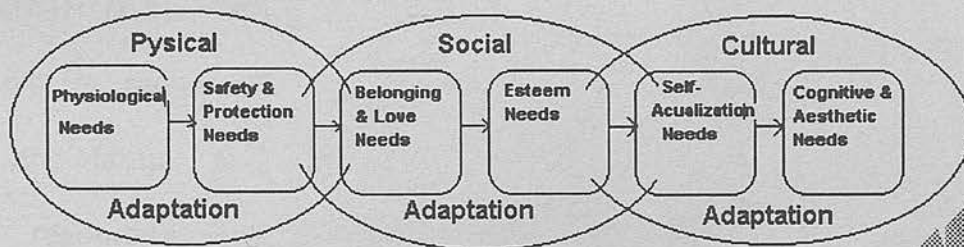
theory and the relevant literature. This will be followed by further explanation and support drawn from several examples and case studies which take place in chapter eight. It would be useful to mention here the implication that culture has on built form will be best understood when we see culture as a system of change and transformation rather than seeing it as a collection of arbitrary features and phenomena. This will be introduced in the first part of chapter eight which will be followed by the case studies. This may explain the reason for not presenting these supportive case studies in the Model.



## CHAPTER FIVE

# ADAPTATION TO PHYSICAL ENVIRONMENT

Motivated by: (A) Physiological Needs. (B) Safety & Protection Needs.



## CHAPTER FIVE

### ADAPTATION TO PHYSICAL ENVIRONMENT

Motivated by: (A) Physiological Needs. (B) Safety & Protection Needs

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#### 5. 1. Introduction:

At first Man occupies a piece of land which possesses particular features and introduces certain possibilities, for example a range of flora and fauna, and other resources and economic potentialities.

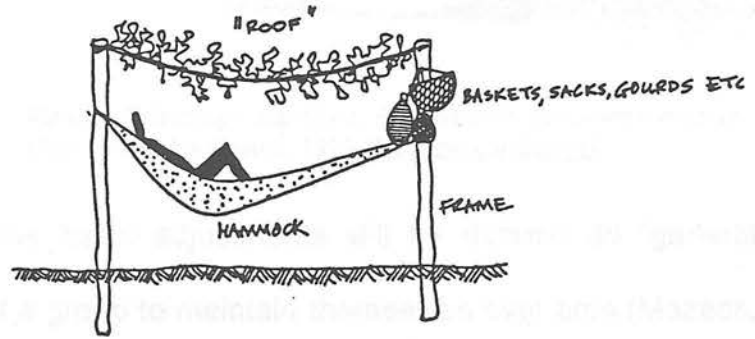


Figure 5.1: Minimum Shelter, Colombia.

At this stage the (Source: A. Rapoport, 1969 House form and culture)

essential physical needs of man's body are first met by arrangements for feeding, heating, housing, clothing, equipment making and so on. They are usually achieved by building up primitive shelters out of available materials (Fig 5.1).

In the first stage of human adaptation to the environment, provision is made for protection against external forces and against physical dangers. Most of the primary problems of human beings are solved, for the individual by artifacts, organizations of cooperative groups and adaptive behaviour. All this is done to

meet the communal interest within specific vernacular tradition.

Mazess, (1975) reviewed the various uses of the concept and defined adaptation. He pointed out its applicability to a wide range of biological and social levels of organization. The

adjustment of human groups to their environment, results from a complex set of interrelationships between the members of a group and the physical, biotic, and social environment



**Figure 5.2:** Sharing a cup of tea. Adaptation to minimum resources. (Source: Charles Correa, 1989 The New Landscape)

that surrounds them. These basic adjustments will be defined as "general adaptation" or the ability of a group to maintain themselves over time (Mazess, 1975). see (Fig 5.2).

Cognitive knowledge is passed from one generation of builders and craftsmen to another. However, it is not the contributions of individual geniuses which are the source of creation and progress, it is the existence of a system in which each generation builds on the achievements of its predecessors, and cognitive knowledge and skills are built up cumulatively.

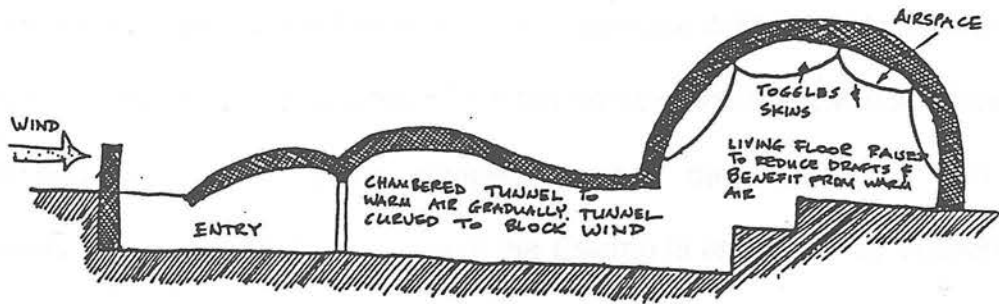
Steadman, argues that there is a very general idea that technical progress in

building, the accumulations of structural, material and engineering knowledge and the refinement of construction form and technique, have been the products of extended historical processes of trial and error by many generations of builders. (P. Steadman, 1979).

*Series of buildings, one succeeding the other, and the last [of which contains] not only all the improvements before introduced into all the former examples, but [contributes] something new itself towards perfecting a style." (P.Steadman, 1979, p.83)*

## **5. 2. Adaptation to Nature and Climatic Conditions:**

The first step of adaptation to physical environment was to provide shelter. In the beginning this shelter is basic for protection against climatic conditions and external forces. All buildings, whatever their function, have to meet certain physical constraints, whether these are the outcome of a long tradition of received techniques, assembled by trial, error, and experimentation, or based on detailed mathematical calculations and the application of formulae. Ultimately the basic laws of physics will decide whether they will stand up or collapse. Relationships between convenience, and maximizing of potential available resources shape the response to laterals and their structural possibilities. Adaptability and the perception of benefits against custom influence change. On the other hand the need to create adequate conditions for the pursuit of living and social activities mould the response to the climate.(Rapoport, 1969)



**Figure 5.3:**Diagrammatic section through Igloo.  
 (Source:A. Rapoport,1969 House form and culture)

The next section presents examples from different areas across the world to show how man adapts his environment to these different climatic and physical conditions.

### 5. 2. 1. Examples from the Arctic Areas:

Survival in the polar regions would not be possible for extended periods without effective means of shelter. This shelter would insulate a family against the rigours of extreme cold and exposure to winds, fogs etc. Climate, undoubtedly, is a major factor in the development of building types. Without clothes or shelter a human being will soon die when exposed to a temperature of  $-5^{\circ}\text{C}$  ( $23^{\circ}\text{F}$ ). Eskimos have been able to live in the severe conditions of the Arctic because they have developed clothing and dwellings that give them the protection that is vital, and the technology that has made them possible. It is an adaptable dwelling, which allows the addition of habitation cells for storage or extensions when two or more families wish to link during the long winter.

According to Rapoport (1969), there are indications that Eskimos have developed a physical resistance to chronic exposure to extreme cold, with blood-flow within the hand being twice that of whites from temperate climates. Even so, their main resistance to excessively low temperature has been achieved with great ingenuity. Unquestionably the Igloo of the Eskimo is an extremely efficient form of dwelling. The snow house has been devised from the most economical means; the vault constructed without framework by the spiral and chamfered blocks. The dome offers the maximum volume possible with the minimum surface area. Moreover, the dome has no internal corners or areas where stagnant or cold pockets of air could form. On the other hand the contours permit the conservation of heat and energy and help in the circulation of air.

The Eskimo Igloo has often been characterised as the ideal and graceful solution to the harsh, cold, and windy climate of the Arctic. For example, the hemispheric shape maintains the least wind resistance and the Igloo is usually located parallel to the wind (there is a tunnel entrance) to avoid its full force. In addition, a small wall is constructed at the tunnel entrance to keep the wind from blowing in. Eskimo encampments are also placed to avoid extreme exposure to the severe elements of the Arctic. An Igloo village is usually established near the sea in a place sheltered by adjacent mountains, to avoid such severe wind as much as possible, (Rapoport, 1969).

Many other design features of the Igloo exhibit understanding of the climate, for example the tunnel entrance into the Igloo is carved to prevent cold air from

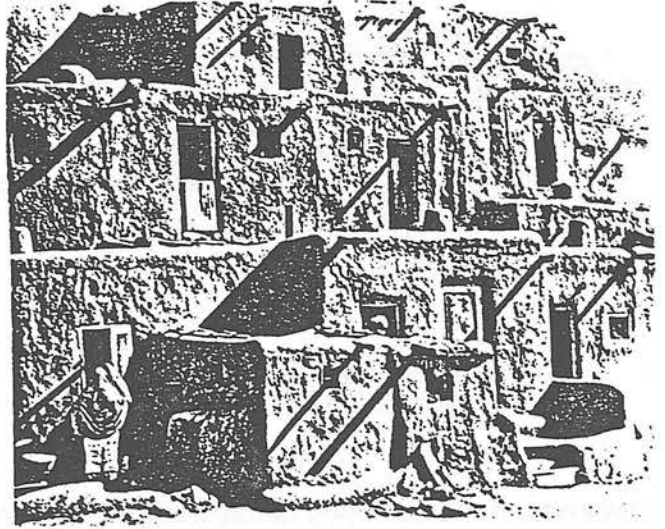


flowing into the dwelling. There are often additional, separate sections within the tunnel to encourage heat retention. One tunnel entrance may serve several dwellings that are connected by interior passages. This helps retain heat and avoids exposure to the outside. The interior of the Igloo is elevated above the level of the tunnel. Because heat rises, this design feature preserves heat. Interior heating is partly accomplished by seal oil lamps; these operate quite well in the hemispheric shape of the interior, which is more efficient than a rectangular surface in preserving heat. Furthermore, the interior walls partly melt and then freeze, which makes for a strong seal. It is said that the igloo becomes so strong because of this melting and freezing that a polar bear could walk across the top and not damage the dwelling (Cranstone, 1972). By hanging animal skins on the inside walls and ceiling to create an air space, the occupants achieve additional warmth by means of a storm-window effect. Because of all these heating techniques, Eskimos are often portrayed as wearing very little clothing while in the igloo. One observer noted, *"Living in one is like having your head in the tropics and your feet in the Arctic."* (Paul Oliver, 1969).



### 5. 2. 2. Examples from Hot and Dry Areas:

Dwellings in very hot or dry places are often responsive to the climate too. For instance, according to Rapoport (1969), a Pueblo Indian dwelling in the hot, dry areas of the Southwestern United States reflects part of the problem of adapting to this climate. The buildings of Pueblo communities are multistorey, rectangular, terraced dwellings minimizing surface exposure to the sun and maximizing cooling, especially in the lower inside rooms. Moreover, that flat roof can be used for sleeping during hot nights.



**Figure 5.4:** Dwelling of Indian Pueblo in the Southwest of the United States. (Source: W.M. Bray, 1989 The Ancient Americas)

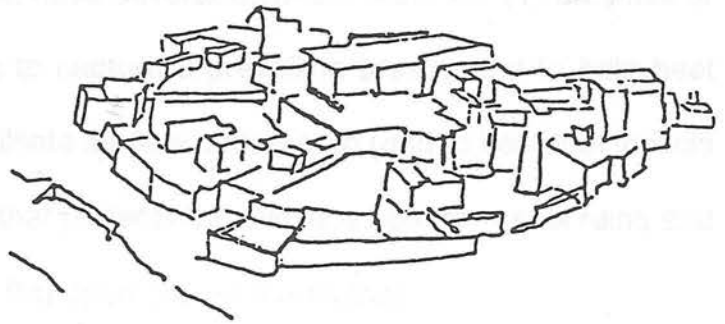
Rapoport (1969), also describes how some homes in hot Middle Eastern countries are built with thick outside walls and high ceilings. This not only keeps out the heat but allows the heat to rise to the top of the dwelling during the day. Such a form



**Figure 5.5:** Courtyard houses, Isfahan, Iran. (Source: K. Talib, 1984 Shelter in Saudi Arabia)

also permits retention of some heat during the cold evenings. Many Middle Eastern homes also have an inner courtyard that contains shrubbery, foliage, water pools, etc. These design features, Rapoport states, may lower ground temperatures and ease the flow of cool air.

Desert settlements tend to be clustered together and urban forms of compact housing are common throughout the Middle East, also in many parts of the dry savannah regions



**Figure 5.6:** Monolithic village under one roof in Morocco.  
(Source: K.Talib, 1984 Shelter in Saudi Arabia)

to the south of the Sahara, figure (5.6). Defence against solar radiation starts with the orientation of the building which is sited to expose as little as possible of its external surface to the intensity of the sun. Dense, thick walls of stone and mud are invariably built, and houses are constructed close together, casting deep shadows over passageways and lanes and on the walls of adjacent buildings. There are few opening in the outside walls, and the houses frequently face inwards to courtyards.

### 5. 2. 3. Examples from Tropical Areas:

In a tropical climate, temperatures are high and there is considerable humidity and rainfall. Here dwellings are needed to provide shade and protection from rain, and they should have little heat-retaining quality. In the solution to such a climate, one sees dwelling designs that have several common features: (1) no walls or very thin walls and screening to capture a prevailing breeze and to help heat loss; (2) raised dwelling to facilitate air flow underneath (and to keep out insects and animals); (3) roof design that protects the dwelling from torrential rains and also avoids heat build up. As Rapoport (1969) states that:

*"The roof becomes the dominant element on these houses and is, in effect, a huge, waterproof parasol, sloping steeply to shed torrential rains, opaque to solar radiation, and of minimum mass to avoid heat build up and subsequent re-radiation. It also avoids condensation problems by being able to [breathe]. Deep overhang is protection against both sun and rain, also allow ventilation during rain."* (Rapoport, 1969, p.94)

In such homes, there are often no walls separating areas, windows have open-vented screens, and people sleep in hammocks that facilitate air flow and minimize the build up of body heat. So, in extreme climates most dwellings are responsive to environmental demands.

### 5. 2. 4. The Affect of Resources and Building Materials:

There are many other considerations which can affect the nature of dwellings across the world, such as the availability of certain materials, like wood or stone, as well as varying kinds of



Figure 5.7: Farmhouses in Finland where wood is available in plenty. (Source: K. Talib, 1984 Shelter in Saudi Arabia)

environment in which different people live. The buildings of native civilisations were as native to their geographical location as is a plant that would grow in Italy but not in Scotland. Much of this development was due to the available materials as well as to the climatic influences. Available materials, for the average building, often meant materials that were on hand such as natural products growing nearby or materials extractable from the earth such as mud, stone, reed, etc. (Fig 5.7& 5.8).

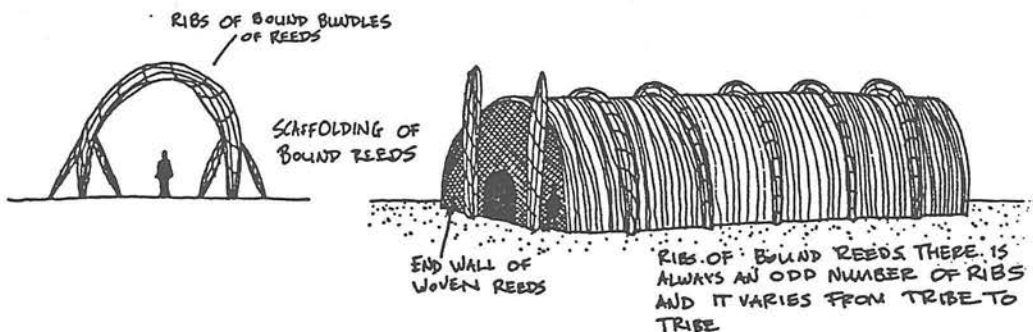


Figure 5.8: Marsh Arabs, Iraq, dwelling made of reeds which is available in plenty. (Source: Amos Rapoport, 1969 House form and culture)

Of course economy was another factor in play - the ancient civilisation of Egypt lends a good example here. Despite being a country rich in granite and sandstone, these materials were difficult and expensive to quarry and transport, and thus reserved for the building of monumental public buildings and tombs or a privilege for the rich and powerful. For the majority of Egyptians the more humble materials of mud and papyrus reed were employed in varying degrees of technology, from wattle-and-daub plastered reed huts to wall-enclosed, sun-dried brick houses.

*"That is why folk building growing in response to actual needs, fitted into environment by people who knew no better than to fit them to it with native feeling- building that grew as folk-lore and folk-song grew, are today for us better worth study than all the highly self-conscious academic attempts at the beautiful throughout all Europe."* (Frank Lloyd Wright, 1910). Quoted by Paul Oliver, in his article "Attitudes in the Modern Movement", Shelter and Society, (1969, p.16)

### 5. 2. 5. Analysis of the Physical Environment:

Dwellings are built to serve a variety of functions, but one of the most important is to create a "microclimate" acceptable to their occupiers. Buildings do not control the climate, which apart from the wind or sun shadow that they may cast, remains largely unaffected by them. But inside, the dwelling does regulate the climate and formulates internal conditions that come closer to those that the occupants find most comfortable. When we light a fire or, if we are among the privileged minorities, turn on the central heating, we are in one way or another responding to the current climatic conditions. Our response is sometimes to repel the effect of the weather, cladding the walls with a water-resistant material to keep out the rain, building a roof with a steep pitch to shed the snow. Or sometimes, it is to accept or welcome the weather, or an aspect of it; when we open the windows to "let the fresh air in" or on a bright, cold day we sit by a glazed window to enjoy the warmth of the sun's rays. All these things that we do are adaptations to the physical environment.

Though we spend much of our time out of doors outside the dwelling, we also spend a great deal inside; more in some weather conditions than in others, for the climate changes not only seasonally, but daily, even hourly, in some regions. Seldom are both night and day temperatures equally to our liking: the evening gets chilly, the morning is fresh, the noon sun too hot. Almost every type of dwelling serves the function of helping us in adjusting to one or many aspects of the climate. One type is effective in keeping the wind off us, another for keeping

the occupants cool in burning heat. They may not always be equally good at coping with a variety of climatic conditions; but often they do, in most cases. When this happens we may emphasize that the house is warm in winter and cool in summer. Often we describe internal temperatures or relative humidity in terms of comfort; though comfort values differ widely between cultures. These differences in attitudes to comfort are partly physical, but they are also psychological and cultural.

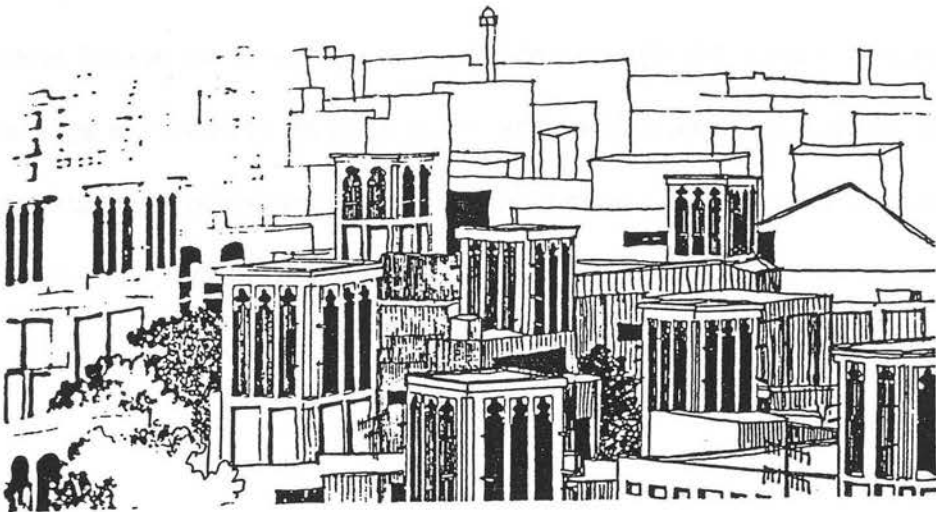
*"Almost the only factor common to all the examples already cited is that they are the shelters of societies whose social patterns require of their building specific forms to accord with their material, spiritual and kinaesthetic needs, resolved through the available resources and conditioned by factors of economy, environment, climate and site. They are shelters built from within the community as essential to its life and as a direct expression of it and not to plans and specifications of appointed specialists." (Paul Olver, "The need for a new approach" Shelter and Society, 1969, p.28).*



### 5. 3. Living in Comfort:

Comfort conditions, or the thermal balance between the body and that of the environment in which one finds oneself, depends on many factors. Some of these are biological, such as the metabolic rate, the skin temperature and the capacity of perspiration to bring down body heat. Others are to do with the variable conditions of a given environment, such as the temperature of the air, its humidity, the radiant temperature of the sun, the ground, or buildings, the movement of the air, and so on.

One of the most ingenious and widely used climate modifiers is the wind - scoop, which collects breezes above roof level and transmits them to the living quarters. In common use from North Africa to Pakistan, the wind-scoop takes a variety of forms.



**Figure 5.9:**Wind towers in Bahrain.  
(Source:K.Talib, 1984 Shelter in Saudi Arabia)

Trees, especially in the aired areas, are also important modifiers of the climate providing shade and they are sufficient in cleaning the air. Moisture in plants, shrubs and trees helps reduce air temperature by the process of evaporative cooling. At the same time the transpiration of the leaves also helps in lowering the temperature while increasing the humidity. Shade trees can substantially cool the air beneath them. Trees near houses allow the heavier, cooler air to pass to the buildings while intercepting the hotter air at foliage level. So in courtyard houses trees are valued and, similarly, trees along a street add greatly to comfort conditions specially in hot climate.

Many adaptive measures that contribute to an improvement of comfort conditions in an arid climate are even simpler than the planting of vegetation, and more immediate in their effect. Cross - ventilation is necessary to create a through passage of air; it is not sufficient to have one side of a loggia open if there is no means for the air to escape or be drawn through the space. In village homes openings are often to be seen in the walls which allow air to pass through and are situated at levels where the draught is most convenient for occupants sitting or at rest, (H. Fathy, 1986).

#### 5. 4. Theory of Prototype Pattern:

It is important to know that responses to the physical conditions of a setting including climate and topographical features are not arbitrary. These come to form a system which is observed to be repetitive and is the basis for recognising the identity of built forms. Therefore, the study of a prototype pattern is intended to explain this. Briefly, every thing is developed from its prototype, and it is easy to refer any thing to its origin or its prototype. In this context, it is very useful here to suggest the theory of prototype explained by F.Ujam in his PhD thesis 1987. He argues that it has been suggested that one of the most important aspects of the visual perception of an object is pattern recognition which identifies objects in the visual field. Eysenck also suggested that what needs to be accounted for is the amazing flexibility of the human perceptual system as it copes with a multitude of different stimuli. An example of this flexibility much favoured is our ability to recognise different visual presentation of the letter "A" as instances of the pattern "A" in spite of considerable variation in orientation, in typeface in size and in writing style. (M.W.Eysenck, 1976).

For example, in architecture we have the ability to recognise different visual demonstrations of the column, as instances of the pattern "column" in terms of its basic performance, in spite of the variation in size, shape, length, style and materials. It seems clear at every general level that it involves matching information in one memory store (the sensory register) with information in second

memory store (permanent or semantic memory).(F. Ujam, 1987).

In other words, information conveyed by the species is matched with and related to what we know about the world. In fact, various attempts have been made which explain how this matching process occurs. One simple attempt is presented by the "template theories". The idea is that object information is compared directly to various miniature copies (or templates) of previously presented patterns which are stored in the permanent memory. Objects, such as various kinds of columns or brick walls, are identified on the basis of those templates producing the closest match to the object's input. One obstacle this theory faces, Eysenck believes, is when considering how template theories explain the ease with which patterns are recognised in the face of changes in size, orientation, colour, and so on.

It could be argued that there is a separate template for every conceivable instance of a pattern, but this would be uneconomical in storage terms, and thus seems implausible. However, template matching theories tend to be rather unwieldy and ill-equipped to account for the versatility of perceptual processing. These inadequacies are especially obvious when the object belongs to an ill-defined category, i.e. a category for which no single template could possibly suffice e.g. a building, (M.W.Eysenck, 1979).

There is the other theory, the prototype theory, which claims that similarities among related objects play an important role in recognition. Prototype theory

argues that each stimulus or object is a member of a class of objects, and shares key attributes of that class. Recognition involves comparing objects to prototypes, which are abstract forms representing the basic elements of a set of objects. There is no doubt that in architecture those prototypes were evolved or built to achieve the optimal function and conformity with their physical, economic and natural contexts on which various versions of the successive types of objects were based. The obvious advantage of the prototype theory of recognition is that the information stored in permanent memory consists of a manageable number of prototypes rather than a virtually infinite number of templates.

Eysenck introduces an example which gives quite strong evidence in favour of prototype theories as obtained by Frank and Bransford (1971). They started by constructing prototypes; this was done by combining geometric forms such as circles, stars and triangles into structured groupings. Several distortions of these prototypes were then formed by applying one or more transformations to them. Subjects were then shown some of these distorted patterns (but not the prototypes themselves), followed by a recognition set. The results were quite striking, Eysenck stated. The people were most confident that they had seen the prototypes, in spite of the fact that the prototypes had not been shown to them before. The simplest explanation is that the subjects used information from the various patterns presented initially to construct prototypes which were then stored in long-term memory. This prototype knowledge was then used to classify and identify new stimuli, with recognition being simply a function of the extent to which any given pattern matched the stored prototype.

Though formed to serve within their specific area in psychology, knowledge and recognition, the theories of prototypes can indeed be invested in the field of prototype architecture. They provide the clues to how builders and craftsmen of vernacular societies implement inherited knowledge of building arrangements, elements, articulation, etc. which usually evolve in response to image (prototypes) stored in the permanent memory system. It is by actualising these images of architectural elements that a design will tend to be more appropriate, fit and be appreciated, (F. Ujam, 1987). Good examples are courtyard houses [with local variations] which are to be found in the Arab countries and throughout the Middle East. Their plans and space use may vary considerably due to social and cultural conditions, some are single-storeyed, some are several storeys high, but in principle the courtyard responds successfully to climatic conditions of the area.

Dwelling types are influenced by available resources and the skills and technologies employed in obtaining, making, and building with them, which in turn affect occupational patterns. Through generations means have been evolved for adjusting to extremes of environment by modifying the climate within a building while adapting to particular living patterns.

The type of built form summarizes much of its meaning and implies the basic desire for protective enclosure. This is common to most, if not all, people of the earth, in the structures they build to meet that end. Discussion should focus on how they met the requirements of the users at the time of building, and how they may have been adapted to suit changing needs, (A. Colquhoun, 1967).

## 5. 5. Summary:

It has been known to all of us that survival and health depend upon the ability of the organism to keep its internal environment in an almost constant state, in spite of endless and often extreme variations of the external environment. It is easy to notice the significance of the regular systems which enable the body to make useful responses to environmental stimuli. Thus it can be seen how a spontaneous set of physical powers may influence how people adapt their environment in a piece-by-piece response to the physical situations of land. This is a primary factor of influence over the diverse range of forms and styles that we see between different regions.

It is obvious, to a certain degree, that man is able to adapt himself to a particular environment. For climate, however, man is limited in adapting himself and thus employs physical resources to aid him in shelter. The most fundamental needs of primitive man were shelter from climate and protection from the dangers of his site such as the topography, wild animals and enemies. His location of site was essentially influenced by his closeness to resources such as food and water. To build his shelter, other influences came into effect such as materials, economics and technology. The basic needs of today's people in regard to the building of our environment have not changed from the needs of the primitive man - they have developed. Peoples perception of space and form, while largely effected by their desires and expectations, are also affected by people's appreciation and influences of the natural environment.



Therefore, it is clear how building shelter in lands of constant, bright hot sun differs from that in areas where rain, sleet, snow and ice have long seasons. Thus the climate, the permanent condition as distinguished from local, changeable, everyday weather, is a prominent influence. The different arrangement of buildings in disparate climates shows the different living conditions. Size of windows, number, style, their placement towards or away from the sun, to the east, west or north, whether located high or low, whether primarily for light or security, these provide insights to the living conditions experienced in a particular climate. Small windows are more common in both extremes, hot and cold climates as protection from the sun or chill. More clues may be provided by roof shape and form again influenced by climate. Roofs are sloped, pitched or curved for winter snows. In hot climates they are tilted for insulation against the sun, or flat to double as extra rooms such as in Mediterranean countries. They are used for sitting out on in the cool of the evening. In such countries the climate has affected the ways that buildings are arranged in relation to each other.

The windy streets of the Italian hill towns took their form, not only from the availability of certain land, but also from responses to the hot climate. The huddling of buildings together, to create a compact spatial structure, reduced the surface area of the entire built form exposed to the sun, thus, created a microclimate of lower temperature within the town. The walls may be thick to minimise heat penetration during the day. These walls absorb heat slowly during the hot day and release it slowly during the cool night.

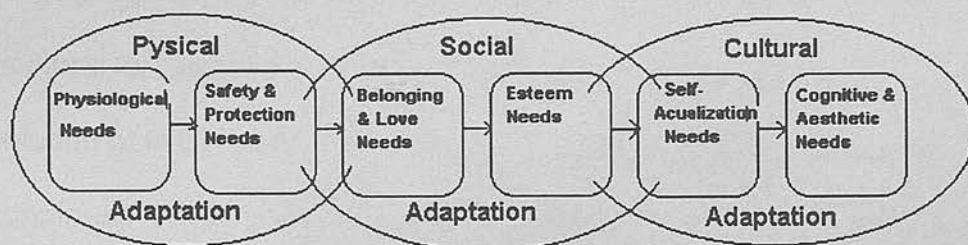
Community structure and family type make demands upon spatial relationships, while the cycles of the day, the seasons, the working year, and of life, profoundly affect internal and external space use. Whatever the plan and utilization of internal spaces might be and however the dwelling is made to adapt to family structure and evolving needs, the dwelling embodies the values of the group to which it belongs. In ascertaining stages in the life cycles of the occupants and in the life of the dwelling itself, these are frequently given special emphasis in meaning, ceremonial, symbolism and aesthetic enrichment.

Societies and the individual attach significance to their dwellings that relate to their value systems ranging from personal identification to the cosmic symbolism of the house, its location, and its orientation. Sometimes wholly implicit, they may be expressed visually through built form, in detail or in both sacred and secular decoration, which reflect beliefs, hierarchy, status, and aspirations. This is what we will look at in the next chapter, the adaption to social environment and its relation to sense of belonging and community life.

## CHAPTER SIX

# ADAPTATION TO SOCIAL ENVIRONMENT

Motivated by: (A) Belonging & love Needs. (B) Esteem Needs.



## CHAPTER SIX

### ADAPTATION TO SOCIAL ENVIRONMENT

Motivated by: (A) Belonging & love Needs. (B) Esteem Needs.

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#### 6. 1. Introduction:

Social and cultural forces have become important in man's evolution because they largely decide the goals towards which he is moving. In other words, socio/cultural forces have become more powerful than biological ones in orienting the evolution of man's way of life. A type of human being who would find comfort and happiness in a certain social environment might be ill suited to another society. In addition aesthetic criteria differ from one place to another, and vary with time.

The physiologists argue that all adaptive changes have a genetic basis, but there are many phenotypic adaptations which are long lasting and yet do not involve modification of the Genoa-plasm. The organism responds adaptively to many kinds of stimuli by behavioural patterns designed to abolish or neutralise the stressed stimulus, or to withdraw from it. The higher the organism is on the evolutionary scale, the more varied are the types of response at its disposal and the greater its ability for selecting limited aspects of the environment to which it can respond. The most evolved types of responses are the processes of social

adaptation, through which the individual organism and the group modify either their environment or their habits, or both, to achieve a way of life better suited to their needs and tastes (R.Dubos, 1972 & 1980).

From the theory of evolution, we know that species become adapted to their environment by a process of natural selection. This adaptation goes on within species just as local population adjusts to local conditions. Sahlins and Service (1960) in their book Evolution and Culture, cited that the adaptive process has two characteristic aspects; creative and conservative. There is the evolution of specialised structures and patterns that enable a culture or a population to achieve an adequate measure of adjustment to its environmental setting. On the other hand there is a tendency towards stabilization, the conservation of the adaptive structures and modes that have been achieved. (Sahlins & Service, 1960)

## 6. 2. Behaviour:

According to John W.Berry, the term adaptation refers to the changes in culture or behaviour which are associated with changes in an environmental setting. The varieties of change may be called adjustment, reaction and withdrawal. In adjustment, behavioural changes are directed towards reducing conflict, therefore, increasing the congruence between the environment and behaviour. This is achieved by bringing behaviour into harmony with the environment. In reaction, behavioural changes are in a direction which retaliates against the environment.



These may lead to environmental changes which, in effect, increase the congruence between the two, but not by way of cultural or behavioural adjustment. In withdrawal, behavioural change is in a direction which reduces the pressure from the environment, in other words, it is a removal from the adaptive arena, (J. Berry, 1976).

Therefore, the third mode withdrawal is often not a real possibility. For the second mode reaction, many traditional societies cannot successfully engage in retaliation responses. Thus, for most people the adjustment mode of adaptation is the only realistic response. Behaviour, has been viewed as a function of a set of cultural factors which are in adaptation to environmental setting and as a function of direct stimulation culturally unmediated impinging from that same environment. We shape our built environment to serve our social purposes in a way that would confirm and facilitate similar and harmonious social attitudes and behaviours for the successive generations. Built environments that are not supportive to people's cultural and social expectations would rather be changed as cultural values will have priority in man environment interaction.

In some situations the hot climate or any other factor such as scarcity of land or difficult topography, may have influenced the formation of tight grouping of buildings such as in Italian hill towns or in Arab towns. The behaviour of the inhabitants may, in turn, be influenced by the resulting cramped conditions. In their movements through the town, people will make close encounters with others. These conditions may seem restricting and crowded to the visitors to

whom they may at first prove an exciting novelty, which may soon dissipate into feeling of restriction, overcrowding, discomfort and even stress. To the native these conditions may be perceived as normal. The native would have adapted himself and his behaviour to living in such conditions. Thus they would have a smaller personal space than some visitors, who may be used to wider streets and larger spaces.

The built environment may affect our behaviour in other ways. Consider how we may fall silent when entering a mosque in contrast to our behaviour while in a stand at the football match. We fall silent and may feel self-conscious when we step into a lift with strangers. Here our behaviour is circumstantially affected, for lifts are designed purely to transport people efficiently and not to impose silence upon them.

Men and women are frequently separated in Arab cultures and this is much to do with the privacy of the women themselves. Privacy takes many forms. People may prefer to perform certain tasks in private such as eating or talking on the telephone. This is quite different to the privacy of the women in Arabian cultures where this factor may not just affect the spatial layout of a building, but the whole series of interconnecting spaces, and thus influence the town layout. Degrees of privacy depend on many factors such as physical and social and these may be reflected in the house layout. Different rooms hold differing degrees of privacy such as the "individual private"; "family private"; "family and guests"; and "semi-public."

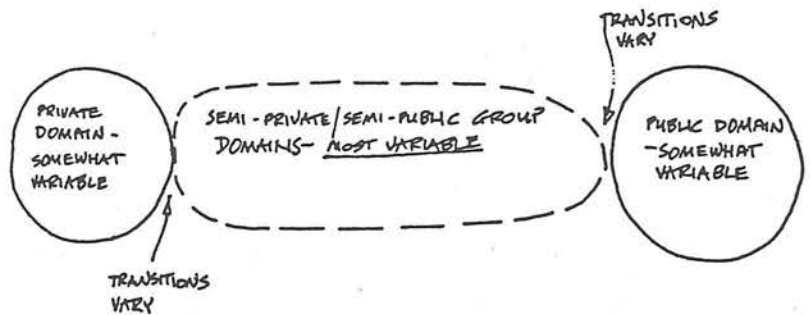


The way that a society perceives its environment is also largely determined by its beliefs, values and desires. For example in the United States, central location (down town) often indicates low status and is seen as undesirable; whereas in Italy, it still indicates very high status and is most desirable (Schnapper, 1971).

### 6. 3. Privacy:

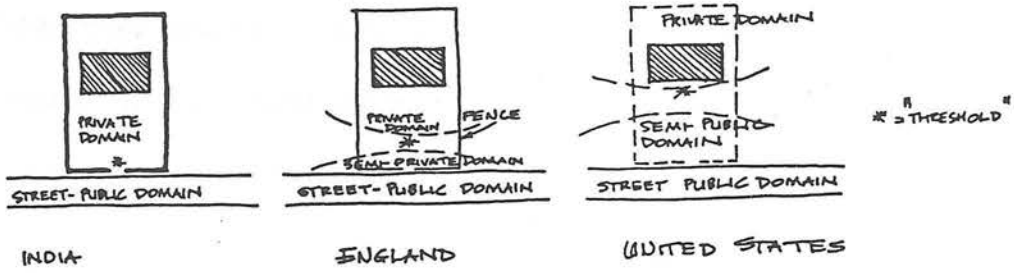
Privacy is an interpersonal boundary regulation process by which a person or group regulates interaction with others. The privacy regulation permits people to be open to others occasionally and to be closed off from interaction at other times. Therefore,

privacy is a changing process under which people attempt to regulate their



openness / closeness to **Figure 6.1: Public/private domain in all cities.**  
(Source: A. Rapoport, 1977 Human Aspects of....)

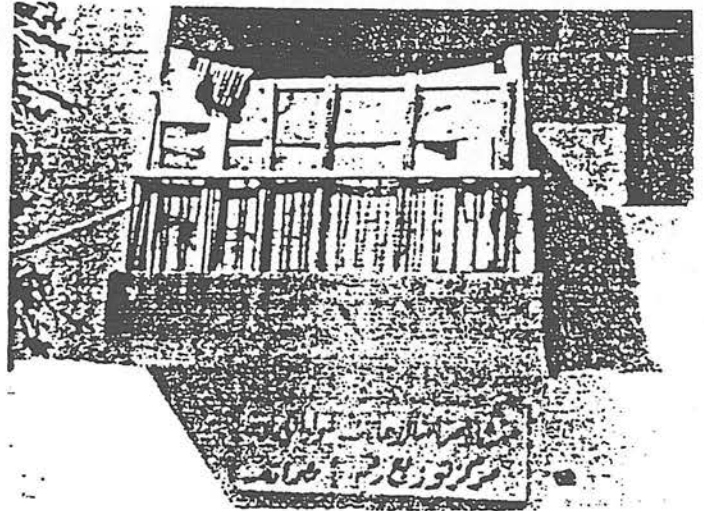
others (Altman, 1975). People mentally establish a desired level of privacy, a level of interaction or openness they would like to have in a particular setting. Their desired level of privacy might involve being open and wanting to interact with another person, or it might be to avoid others and to be inaccessible to them.



**Figure 6.2:** Public/private domains in houses in three cultures.  
(Source: A. Rapoport, 1969 *House Form and Culture*)

Privacy is a dynamic process by which people vary in the degree to which they are accessible to others. There are times when people wish to interact with others; there are times when they wish to be alone. To be with and to be without interaction is not separate process; they are part of the same phenomenon. Thus, one rarely attempts to avoid all contact with others beyond a limited period. One rarely seeks to have a total, unending contact. Instead, one oscillates over time, sometimes seeking interaction with others and sometimes avoiding it, (A. Rapoport, 1969).

We use objects and areas in the environment to reflect our availability to others or not. Sometimes we allow or even invite others into our territories; at other times we shut off personal places to the reach of others. We close or open doors; we use signs that



**Figure 6.3:** The lack of privacy in the new houses in Libya.  
(Source: S.M. El-Forte, "An investigation of appr....")

say Keep Out or Welcome to our place. The need for privacy forces owners to screen their houses by adding a wall, cloth or metal sheets to secure some personal privacy. These are examples of personal adaptation that can be seen all over the world (Figure 6.3).

#### **6. 4. Personal Space:**

Personal space is one of the several environmental mechanisms that people use to regulate their privacy, or accessibility to others. In our everyday social relationships we always use distance between ourselves and others. We make ourselves physically and socially more accessible or less accessible by moving closer to or farther away from others.

However, personal space is not fixed or unchangeable. Sometimes we move closer to others and sometimes we move away, as we attempt to maintain an "appropriate" or "desired" level of contact with them. Therefore, personal space is the space within an invisible boundary around people that is with them everywhere they go.

Altman and Chemers (1984), in their book Culture and Environment cited that Edward T. Hall, an anthropologist, stated that in North America people use four spatial zones in their dealing with others in everyday situations and the study suggested it is the case for the human beings all over the world. He termed these zones as intimate, personal, social, and public zones, to illustrate levels of

interpersonal contact that are used to reflect closeness or intimacy. Furthermore, the use of these zones varies with the settings within which people find themselves. He observed that spatial zones are differentially appropriate for various social relationships.

#### **6. 4. 1. Intimate Zone:**

The intimate zone 0-45cm is usually reserved for people in an intimate relationship, such as close friends or lovers. Strangers or even just colleagues usually do not use this zone in all cultures. If you move into the intimate zone of a stranger or acquaintance, you are likely to notice any of a diversity of reactions. People might move back with or without a comment. They might have a strange look in their eyes. Sometimes they might even move closer and act in a romantic way, if they interpret your behaviour to mean a desire for more intimacy. In any case they are unlikely to continue an informal talk in the intimate zone. Instead, they will readjust their distancing to suit the setting and/or their interpretation of your relationship to them, (Altman & Chemers, 1984).

#### **6. 4. 2. Personal Zone:**

Personal zone 45cm to 1.20m on the other hand is the zone that is traditionally called "personal space" and it is assumed that movement closer than this zone, into the intimate area, will produce tension, anxiety, and stress, especially in public or between strangers. Communication possibilities continue to be rich in

the personal zone, although less so than in the intimate zone. This zone allows a range of contact between people, from relatively intimate to more formal. It is a zone that people commonly use in public and it seems to be a "normal" contact distance in all cultures. Furthermore, the personal zone enables people to remain in reasonable proximity or to move towards more intimate or less intimate communication.

#### **6. 4. 3. Social Zone:**

Social zone 1.20m to 3.50m is acceptable for a range of contacts in all cultures, it appears in business settings, among co-workers, and in some social situations. Touching is not possible at this distance and most olfactory and heat cues are also absent. Visual and auditory cues serve as the main vehicle of communication in this zone. It has been noticed that beyond this distance people lose the ability to communicate easily with one another.

#### **6. 4. 4. Public Zone:**

On the other hand public zone beyond 3.50m is a formal distance used on public occasions and is usually reserved for high-status figures. Public speakers are typically located in the public zone in relation to the nearest member of the audience. Obviously, touch, thermal and olfactory cues do not operate in this zone. In addition, speech becomes more formal at this distance, enunciation and phrases are more formalized and emotional expression is exaggerated in order

to be understood.

### **6. 5. Territorial Behaviour:**

Although there were disagreements about the appearance of territoriality in earlier times in human history, most writers agree that, with the rise of agriculture some 10,000 years ago and, to some degree with the progress of exercises of herding and animal husbandry, humans became quite territorial. Once people settled down to become farmers or to raise animals, territorial behaviour became quite dominant. People became attached to their land and disliked its use by others, they became sensitive about where their land began and ended and they resisted free and uncontrolled access by others.

Lenski (1966) argues that the emphasis on land ownership probably arose during the shift from simple technologies, in which the amount of land available far exceeded that which could be cultivated, to more intensive agricultural technologies, which placed a premium on all available land. In addition, agriculturists often cooperated with one another, practices division of labour, shared crops and engaged in mutual protection. This cooperation probably contributed to the formation of stable communities and the need to define boundaries, to establish governance structures and to develop mechanisms for resolving land conflicts. (I. Altman, & M. Chemers, 1984).

Thus, within the past 10,000 years a large portion of the world's population has

settled down and exhibited increased territoriality, involving ownership and defence. Even among people practising animal husbandry and herding, who did not always live in a fixed place, territorial behaviour probably became quite strong in relation to grazing areas and protection of livestock from raids. The fact that among modern people who are more or less settled down, and with the advent of agricultural and pastoral life, it is clear that territoriality among humans became widespread.

It has been noticed that people tend to be more dominant and influential in their own territories. One can extend an invitation only to a place under one's own control. Therefore, hospitality is expressed by inviting someone into one's own territory and is subject to one's ownership of the territory.

The basic idea is that territorial behaviour is one of several mechanisms used to regulate privacy and self/other accessibility. Along with personal space and verbal and nonverbal behaviour, territoriality enables people to make themselves more and less accessible to others. Territories can be occupied and controlled by a variety of actors (individual, small groups, communities and larger collectives) and that territories vary in scale, from small to large.

The concepts of territory and territorial behaviour are interrelated in such a manner that the exact definition of each must be based on an understanding of the other. Most scientists define territorial behaviour as the behaviour of an individual (or group) claiming control over a particular area. In addition, however,



unlike personal space, which has no meaning without the individual surrounded by it, territory has a physical meaning of its own. It is a given area with given physical characteristics. According to Altman (1975), there are many definitions of animal and human territorial behaviour as he suggested.

*"First, territory refers to objects, places, or geographical areas that can vary in size from small to large and can have any shape, such as toys, seats at a table, rooms, homes and nations. Second, most definitions include the idea of ownership or control over use of a place or object. Control can cover the range from others not being permitted entry or use to others being permitted in limited ways. Third, many definitions suggest that occupants personalize places in some way -for example, animals by secretions, excretion and noises and human by use of symbols and artifacts such as fences and signs. Fourth, various definitions suggest that territories can be controlled by individuals, small groups, or large groups. Fifth, some definitions suggest that occupants often resort to defense and protection of territories in the face of actual or potential invasion by others. Sixth, many definitions, especially those dealing with animal behaviour, refer to the functions of territories, such as mating, population control, rearing of young and protection of resources."*

(I. Altman, & M. Chemers, 1984, p.121).

According to Altman, there are three types of territories: primary, secondary and

public. Human territories vary in their importance in the lives of the occupants. Some territories such as homes, are primary territories and are extremely important to the well being and lives of their occupants. Public territories, such as seats on a bus or places in line, are generally not very important: they do not occupy a central role in the lives of their users. Personalizing a place permits a person to be distinguished from others and contributes to a sense of uniqueness and identity. Regulation of relations within and between groups is an important goal served by territorial behaviour, and it contributes to the smooth functioning of social systems.

#### **6. 5. 1. Primary Territories:**

Primary territories are simple to define, a family home, a person's bedroom, a family farm, a company's offices a community's property, a nation's land. All these places are psychologically significant to their inhabitants and are something with which they identify strongly and which they occupy on a relatively long-term basis. Furthermore, primary territories are usually under the complete and unambiguous control of their members. In all societies, one rarely enters someone's home without explicit permission, and the home is a place over which occupants generally have complete control.

*"Primary territory [are] owned and used exclusively by individuals or groups, are clearly identified as their by others, are controlled on a relatively permanent basis and are central to the day-to-day lives*

*of the occupants."* (Altman, 1975, p.112).

Intrusions into primary territories by unexpected or uninvited people are considered as a serious business and can lead to strong defensive actions. For example, it is permissible and legal in all societies to protect one's home against intruders and it is permissible under world law to defend one's nation against undesired entry or invasion. Perhaps the protection of primary territories is allowed because such territories are so important to a person's or group's well-being and viability. Thus, it is believed to be important for people to have homes and places within homes, such as bedrooms where they can retreat, where they can assume a certain image and status within a family and within society and over which they have relatively complete control. So, in a variety of ways, primary territories are crucial to the lives of people and groups in all societies and cultures.

#### **6. 5. 2. Secondary Territories:**

Secondary territories are less restrictive, less psychologically essential, and less under the authority of their occupants than primary territories. Secondary territories are exemplified by the neighbourhood mosque or church, the private country cooperation or social club and the neighbourhood street. They have a combination of public availability and some control over their use by occupants. They are a bridge between primary territories, which are owned by occupants and where occupants maintain strict control over use and public territories, which can

be used on a temporary basis by almost anyone who follows basic social rules.

Newman (1972), [cited by Altman & Chemers (1984)] theorized that a considerable amount of crime in urban low-cost housing projects may be due to the lack of (defensible space) in such places. He theorized that, because of their design features, certain semipublic areas - hallways, stairways, entranceways to buildings, paths and walkways - (1) are not easily kept under surveillance by occupants and (2) do not give the appearance of being (owned) by anyone and are therefore easily accessible to potential criminals.

Newman's solution to the problem is to clearly design semipublic areas with some of the characteristics that we have attributed to secondary territories. For example, he proposed the use of fences and symbolic barriers such as hedges, the clustering of entranceways to serve a few apartments and the creation of enclosed minipark areas. As a result of these and other means, Newman hypothesized, (1) residents will have a greater sense of identity with a place, (2) it will be easier to see and question intruders and, (3) outsiders will perceive such areas as secondary territories under the control of occupants. Thus, clearly defining secondary territories through markings and other environmental messages may make conflict less likely.

### **6. 5. 3. Public Territories:**

Public territories are temporary and they usually are not central to the lives of their occupants. Parks, public beaches, seats on a bus or train, restaurant tables and seats in a theatre all are examples of public territories. Furthermore, almost any member of a society or subgroup is permitted access to public territories on a temporary, short-term basis as long as he or she observes certain minimal social rules. For examples, one must wear clothing on most beaches, one must not litter public parks or remove natural material from preserved areas.

Public territories appear in all cultures. No matter how small a community, one usually finds areas that most members of the culture can use. For example, a central marketplace or plaza, a street, shopping areas and public thoroughfares exist in almost any community in the world.

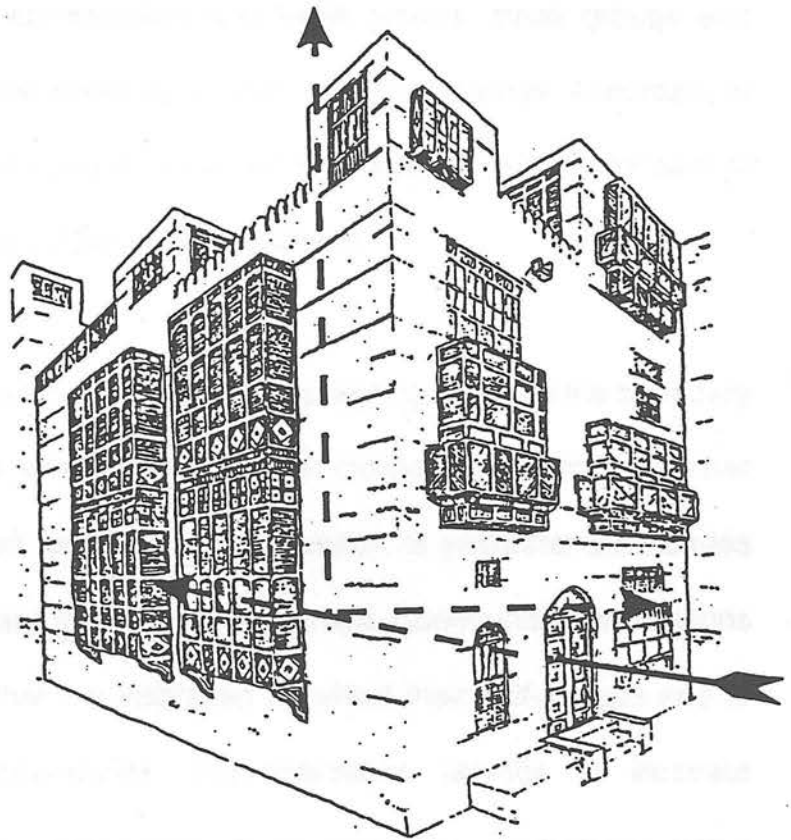
### **6. 5. 4. The Analysis of the Territories Inside a Home:**

The total area of a family home, from the perspective of an outsider, is a primary territory. It is a place the family occupies and controls on an enduring basis and the family has absolute freedom to decide how and when visitors may use its home. On the other hand, from the viewpoint of family members themselves, the home can be described as including primary, secondary, and public territories in connection to the family users. Parental bedrooms and older children's bedrooms usually function as primary territories, the occupants having substantial control

over access and use. Other areas of the home might function as secondary territories, with access restricted to subgroups of the family, such as a group of rooms and bathroom shared by a subset of children. At the same time still other places in the home may serve as public territories, such as the kitchen or family room, where everyone in the family has control on a temporary basis.

In this case we can bring examples from Arabic houses to show the places which are permitted to guests

and places which are limited to use by relatives. When a person comes to the house of an Arabic family, there are certain rules he has to know and obey. If he is just a guest and not a relative of the occupant, he knows that he is allowed only



**Figure 6.4:** The closer you are to the family, the deeper and higher you can go. An Arab house in Jeddah. (Source: H.A.S. Jomah "The Tradi...")

The case is different if he is one of the occupant's relatives because he would be allowed to go beyond the guest room inside the house to an area called the common room. If he is a more close relative he is also allowed to go beyond that

to some of the private rooms and so on. This is related to the concept of privacy and its relation to the social life and social adaptation to that way of life.

### **6. 5. 5. The Functions of Territorial Behaviour:**

Territorial behaviour facilitates a diversity of functions, many of which are connected with basic life rules, such as the rearing of young, mating and ensuring a food supply. Edney (1976) shows that territoriality is a major organizer of human life at the level of communities and large groups, small groups and individuals. He states that life would be chaotic without territories. According to him, there are two general functions of human territoriality, (1) management of personal identity and (2) regulation of social system.

Territorial behaviour manages personal identity by helping to define the boundary between the self and others, whether the self is an individual or a group. In other words, identity management facilitates the regulation of self/other boundaries between a person or group and the social environment. Communities and nations use symbols and slogans that are displayed to reflect their self-images and to indicate their territorial boundaries. Personalization attends to illustrate simultaneously one's distinctiveness from others and one's common ties with a community. Personalizing a room with decorations, an individual puts a personal stamp on the environment, informs others where his or her place begins and ends, and also justifies to the world the values and beliefs that he or she holds. Therefore, personalization can serve, to organize life and facilitate social



relationships.

The other function of human territoriality is regulation of social processes, involving control over various resources. Primary, secondary and public territories enable people to survive physically and psychologically and to handle life functions in an orderly and systematic way. It would be hard to function well without any territories at all, whether they be a portable tent or permanent home, a temporary encampment of a nomadic group, or a nation that has stable borders. This is not to say that it is the territories themselves that are important, rather, what is crucial is access to the resources they contain.

#### **6. 6. Self Therapy and Personality:**

If all human beings learn to know what they lack, learn what their fundamental desires are, and learn in a broad outline the evidence that shows the lack of satisfaction of these fundamental desires, then what they can consciously go about is trying to make up for these lacks and satisfy them.

Love, safety, belonging, and respect from and for other people can almost be a remedy for the situational disturbances and even for some mild character disturbances. This in turn means that the good society is the one that has its institutional arrangements set up in a way that fosters, encourages, rewards, and produces a maximum of good human relationships and a minimum of bad ones.

A cultural habit dictates that a man stands up when a lady enters a room. Similarly giving a lady a chair, helping her with her coat, allowing her to go first through the door and giving her the best and first choice of everything.

A sense of duty implies loyalty, obligation to society, responsibility and social conscience. It also implies the good citizen, the honest person, the fighter for principle, for justice, for freedom, and for equality.

### **6. 7. The Community and Sense of Belonging:**

Man is by nature a social being and has a need to be in the company of others which extends beyond safety and self-preservation. Companionship, friendship, argument, the need to share problems and seek or give advice and debate issues of mutual concern, all play their part. A reflecting on local knowledge and experience, the news of events, the exchange of ideas and information and the expansion of the intellect and the mind is made more possible in the social life.

Social adaptation means that people adapt to live with each other. For example because they have been required to live in a compact environment close to each other they have had to adapt to living together. They produce rules and norms and customs. A person cannot knock on the wall all the time because he has a neighbour who lives close to him. One should not prevent his neighbour from having access to the sun's light by building extensions to one's home. So, social adaptation dictates conditions and rules to people.

In the motivation of belonging, belonging to a group of people, which is evident in many cultures, is parallel to the social adaptation through the concept of community. This would have many implications which would be expressed in the setting up of rules and social norms and habits. In order to elaborate further on this subject, the study introduces a case study related to the Islamic society. This is mainly due to the author's familiarity with the society.

### **6. 7. 1. Case Study: Sense of Community in the Islamic Society:**

#### **6. 7. 1. 1. Introduction:**

During the years 1\622-133\750, exactly at the end of the Umayyad dynasty, the geographic area extending from Spain (Andalus) to India embraced the religion of Islam, and formed what is known today as the Muslim World. During the first three centuries of Islamic history (i.e. by the year 288\900), the basis and principles of the social, economic, and legislative frameworks were established. Building and urban activity occurred at a relatively accelerated pace during these years. Building activity, with its unavoidable problems, created the demand for control and a legislative framework to regulate and adjudicate on those problems. In this way a remarkable body of information was generated in various regions of the Islamic world. This was actively exchanged by learned men on their travels, students seeking knowledge, and the acquisition of manuscripts, (B. S. Hakim, 1986).

Maslow's motivation relates social life to belonging which is the origin of social environment. A group of people living together share values and all will feel a sense of belonging to that particular social group, inheriting that particular place, etc. The Islamic conception of that sense uses it to create unity, strength, understanding and a good quality of life.

This notion that comes from the idea of community life is parallel to the social adaptation. Belonging has been expanded according to Islamic thinking and philosophy. Islam respects the impact of climate, resources, earth, soil, nature, cultivation, and asks people to respect animals, to look after them and enjoy the life that God gives them. Naturally this community is a reflection of life and adaption to its own physical environment.

A friendship, marriage or parent-child relationship would be defined then as psychologically good, if it supports or improves belonging and security. These issues cannot be satisfied by trees, mountains or a commodity for example. Only from other human beings can we get fully satisfying respect, protection, and love. It is only to other human beings we can give these in their fullest measure. These are precisely what we find in good friends, good sweethearts, good parents and children, good teachers and students giving to one another. These are the very satisfactions that we seek from good human relationships of any kind.

We have an ambition not only to be saved and loved, but also to know more, to be curious, to look beyond things. Also we have to reckon with our basic

philosophical impulses to structure the world, to understand it deeply, and to make sense of it. While a fine friendship or parent-child relationship should offer much in this area, these satisfactions are or should be achieved in a good therapeutic relationship. All of us need good marriages, good friendships, good parents, good jobs, good teachers, and so on. We need also protection, love, and respect from and for other human beings.

#### **6. 7. 1. 2. The Principle of Equality:**

All Islamic jurisprudence is based on the idea of the welfare of the whole community. The interest of the majority is tempered by the protection and the right of the minority. Justice must be tempered by mercy, and compassion must be the prevalent feature of the Muslim community. The faithful are asked time and again to show mercy towards those who are less fortunate, to show compassion to the needy, and to be magnanimous in victory and forgiving when in power. It is relevant that the Muslim system was the first to introduce a form of social security and welfare assistance. Whereby the poor and the weak have a right to part of the public treasury, they did not have to rely on the charity of those who are more fortunate.

*"Serve Allah, and join not Any partners with Him; And do good-to  
parents, kinsfolk, Orphans, those in need, Neighbours who are of  
kin, Neighbours who are strangers, The Companion by your side,  
The way-Farer (ye meet), And what your right hands possess: For*

*Allah loveth not The arrogant, the vainglorious;" (Quran, 4:36).*

Islam teaches equality among all his members. According to the Islamic principles there is no deviation between rich and poor, between black and white, all of them are the same in the eyes' of God. So all people will live together in one place and there is no distinction between a neighbourhood for the rich and one for the poor. Buildings that do not embody the idea of equality cannot be regarded as a very illustrious examples of Islamic architecture.

Here, it is easy to see some applications of these principles in terms of urban form. Property rights, while fully recognised and protected, are not absolute. For example, access to water cannot be denied. The right of first refusal of the neighbour in the disposal of neighbouring property (shafa) is a fundamental organising principle. Investment is encouraged and those who hoard gold and silver are warned of dire punishment.

Within this broad framework, flexibility is the hallmark of guiding relations, "*all that is not expressly forbidden is allowed.*" Neighbours are encouraged to reach agreement by mutual consent rather than by arbitration. This approach has led to a variety of subtle and charming air-right development in old cities. It has also allowed organic linkages between different structures that abut each other, partly to fit expanding families and changing needs. It has therefore helped to create a living and changing environment that we have come to appreciate in the unique character of the old Medina [old city], (J. Akbar, 1988 & B.S. Hakim, 1986).

Most of the principles are those that rational human beings would propose by themselves to maintain the natural habitat and to develop enjoyable living surroundings. This is precisely what allows Islamic culture to be adapted to the cold climates of the Himalayas, the hot tropical forest of Indonesia and the desert of Arabia. It is this subtle overlay of Islamic principles over regional particularities, the former fully recognising and working with, the latter to help improve the inhabitants' response to their environment. This enables Islam to have its true universal impact creating the *"diversity within a unity"* that the flowering of Muslim culture has shown throughout the ages.

#### **6. 7. 1. 3. The Sense of Responsibility:**

In the Islamic community responsibility is closely related to the Islamic legal system (Shari'ah). Responsibility decides the structure of the environment and influences it. An innate tendency among humans is to take better care of one's own property than that of other people. In traditional autonomous synthesis, the outside party, the authority, did not take care of the spaces that it did not own or control. Instead they distributed these tasks among the residents. Meanwhile, properties in the unified form of submission were cared for by their parties, and principles were developed to deal with shared responsibilities among large parties, (J. Akbar, 1988).

The first principle of ownership is that everything that is necessary and useful for survival is subject to ownership. Meanwhile, such ownership should not harm



others. *"There should be neither harming nor reciprocating harm."* Ibn Taymiyyah's (d.728/1328, from Hanbali rite) definition of ownership is: *"the legitimate ability of manipulating the objects."* The general mechanisms that create ownership are (1) establishing it through appropriation, which is the logical origin of any ownership; (2) transferring a property by selling or giving; (3) continuity through inheritance.

The essential duty of the (Ulama) was to give the Islamic community moral guidance and to preserve the knowledge of religion. They enforced the morals of Islam and were the administrative, social and religious elites. Therefore, every Muslim followed a school of law and looked to the (Ulama) for authoritative guidance on how to be a good Muslim. Muslim jurists have accepted local custom (adat) as a legitimate source of legislation if the custom does not contradicts the Islamic law (shari'ah).

Due to changes in the political structures of many Islamic countries, the shift of responsibility from the community to the authority has caused lots of ruptures in the structure of the society. People no longer care about their environment and their cities because they see this as the responsibility of the state rather than their own. Hadith: The Prophet Mohammed -prayer of Allah and peace be upon Him, says:

*"If one of you sees something that is wrong, then let him set it right; first with his hand, and if he cannot then with his tongue, and if he cannot then with his heart, and that is the weakest of all possible*

*forms of faith."*

Thus the idea is to bring back the notion of responsibility as a tool through which people experience their role and freedom to control and regulate their own environment and solve their problems collectively. The outcome therefore, will be to set an environmental framework based on the value of community as shaped by Islam. A community is seen by the study as the actualization of the adaptive notion of belonging and love motivation.

The Arabic-Islamic cities had grown in a natural way and according to their resident's needs. Residents had the freedom to change their property by adding or reducing it depending on the size of their families. Therefore, the responsibility to solve problems rests with the negotiating delegates of the parties of disputes. This produced solutions to fit their needs without causing any harm to others, because every one felt responsible for the environment.

For example, the right of access to streets for all community, has led to a form of ownership which is shared collectively by the inhabitants. This increases the important claim of control as a determinant of the street's morphology. The principles applying to the main through streets are that any individual may act and change elements in the street as long as no damage is caused to the public and no one objects. The best way to explain this issue is by using a particularly good example, the dead-end street. It indicates well how people in the past practices responsibility of managing the street environment themselves, (J. Akbar,

1988).

### **6. 7. 1. 3. 1. The Meaning of Cul-de-Sac in Muslim Settlements :**

The dead-end street typifies a pattern of responsibility that predominates in traditional environments. The residents of a dead-end street control the street. Nothing that affects the street -such as opening a new door into the street- can be done without the consent of all the residents.

The dead-end street cannot successfully be used in the contemporary environment without regard to responsibility. Municipalities nowadays tend to include dead-end streets in their cities; they use terms such as private, semi-private and semi-public spaces without fully understanding the dynamic relationship between form and responsibility. As a result the contemporary dead-end street, in many Muslim cities, is for residents the same as the through street. They have no control over it and the burden of its maintenance falls on the municipality.

Despite its development, a dead-end street was considered privately owned by the abutting residents who had access to it. The residents controlled the space, and since they were the users, the dead-end street was judged through agreements and not on the principle of damage. If all the members of the abutting residents did not object to a neighbour's action, it was considered tacit agreement. Opinions of jurists and rulings on cases were based on the principle

of collective control, (J. Akbar, 1988).

The following is an example of this, cited by Jamel Akbar in his book Crisis in the built environment (1988). The government introduces regulations for the setback of building but some people object because they see it as an obstacle imposed on their properties. The Mayor of that city justifies this regulation by saying that the regulation is to the user's advantage because such a space would be needed as parking space if parts of the building were transformed to commercial use. An interesting attitude of decision-makers is that they develop regulations citing reasons, principles that can not be changed whatever their validity. Here because of the possible future existence of commercial buildings, all residential buildings were required to have front setbacks. There are obvious disadvantages to such a rule. Increasing setbacks between buildings for any reason will detach these buildings from each other: thus increasing the exposure to the sun and consequently transforming concrete buildings into ovens in summer, (J. Akbar, 1988).

#### 6. 7. 1. 4. Neither "Darar" Nor "Dirar":

"Neither darar nor dirar" refers to a tradition of the Prophet Mohammed Prayer of Allah and peace be upon Him that translates as: "There should be neither harming nor reciprocating harm"; or "There is no injury nor return of injury." This saying was interpreted to mean that one may alter the built environment if the alterations cause no harm to others. This has been used constantly by Muslim authorities to evaluate the legality of individual actions in the physical environment.

Darar is seen when an individual benefits at the expense of others. For example, changing a residential property to a noisy or effluent producing factory will harm neighbours; dirar means an action that harms others without benefiting the acting party, such as opening an unneeded window to look into the neighbour's yard. Dirar has also been explained as harming oneself so as to harm others. The use of the tradition as a tool sanctioned by the opinions of jurists suggests complete freedom of action if others are not damaged.

It also implies the refusal of outsiders' intervention in the decisions of a residing party regarding internal organisation. One can make changes within a property if no damage will be caused to others. The only actions that a party may not execute are those that affect another's property physically. Such as knocking or hammering on the neighbour's wall or those that affect the party of the adjacent property for example intruding on a neighbour's privacy even if the intrusion is not

physical. The tradition implies physical and moral control. The Prophet's tradition says that *"if two damages are concurrent then the lesser (or less severe) should lapse for the greater."*

#### **6. 7. 1. 5. The Morality of the Islamic Community:**

The values that all the members of the society share, see society as an entity that has shared characteristics. For example they all share the same motivation, and the same values. This shared common value system provides a very clear ontological framework, which is constructed out of rules and regulations not necessarily written or documented but well known to people. All members of the society use the same kind of language. This is why others have called it a very strong community, because they are very conscious about all the shared values and shared responsibility. This is not necessary motivated by individual interest but the interest of the whole society because a member of the society will only survive if the society survives. That is the theory of many cultures including the Islamic culture which emphasizes the concept of brotherhood, neighbourhood and on the relationship among people especially neighbours. The Prophet Mohammed (pbuh) said:

*"The angel Gabriel kept exhorting me about the neighbour to the point that I thought he would grant him the right of inheritance." al-Bukari via Aisha.*

*"he whose neighbour is not safe from his harm and dishonesty, will not enter Paradise." Muslim via Anas.*

*"God will not provide security to the person who sleeps with a full stomach while his adjacent neighbour is hungry." Abu Hurairah.*

The Islamic conception of society places strong importance on its total entity if we preserve a sound community then individuals will survive and enjoy that sound organization. If you come to analyze a society and its shared values, you will find that people reflect these in the built environment. So, the built environment is the physical ground for these customs, rituals, ceremonies and values to occur.

According to the moral principles of Islam, for the rich to display their wealth in front of the needy would be wrong. It is not just a matter of respect for their feelings, but, the rich are also required to give money, goods, etc. to the needy to overcome their hardship. This is what Islam teaches the Muslims, therefore, these principles have been reflected in the built environment. For example in Arabic-Islamic cities you find that houses are the same for rich and poor people, there is no division between the rich and the poor housing and all share the one community. They support and are dependent on each other for life.

One of the important principles in Islam is the (Zaka) which makes it obligatory for the rich to give some of their money to the poor. This is not seen as charity



but as money which is entitlement to the poor from the wealth given by God to the rich. For example, if you are rich and your neighbour is poor the morality of Islam will not allow you to bring new clothes or toys to your children without respecting the feelings of the children of your poor neighbour. On the contrary, the duty forces you to do the same for them as you do for your own children. Not to adhere to this would be unacceptable to the society while it will confront you morally, seeing you as bad member.

### 6. 8. Summary:

The suitability of a structure's design can be measured by the comfort of temperature and humidity, the specific materials and layouts. Dimensions of the physical structure must be well adapted to geographic locality to achieve it. Truly

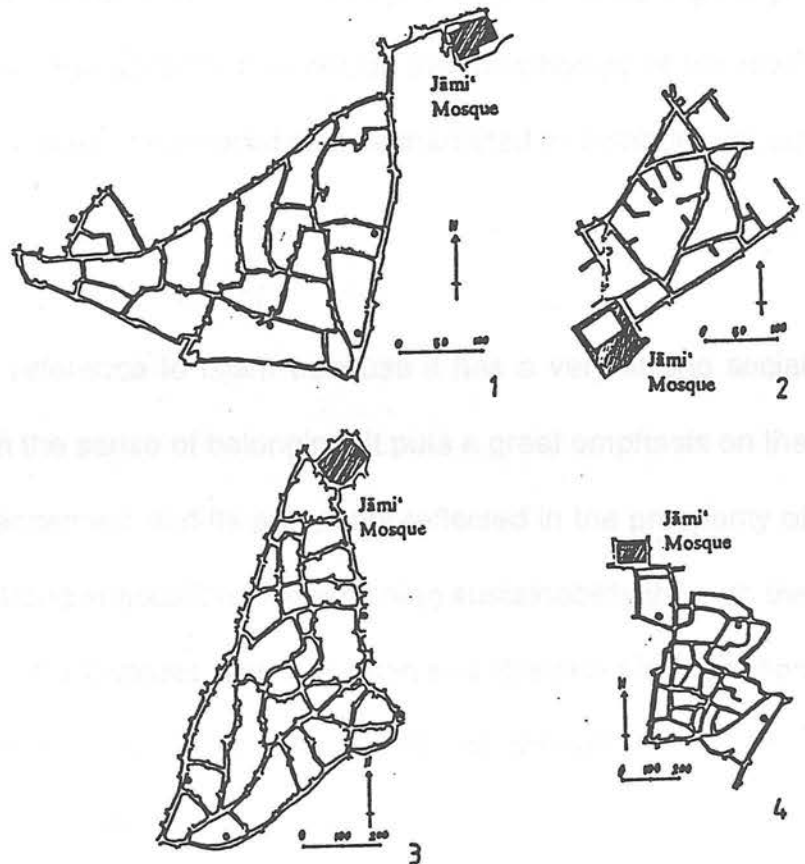


Figure 6.5: 1.Algiers;2.Tunis;3.Mosul;4.Aleppo.The location of the Mosque.(Source:A.A.Khalil,1994"Muslimcities as a pattern of....,"

successful Islamic architecture, its physical attribute will be primarily decided by the specificity of a geographic locality. Thus the product will produce a certain spiritual harmony and simplify a pattern of social interactions that are truly in conformity with an Islamic world-view.

In any city, spaces differ from each other both physically and also in their significance. For example, the Mosque in figure 6.5, has been located in such a way that it provides space outside for people to gather after the prayer. Such space will function to integrate the mosque and the surroundings to the overall structure of the town in which it is located. The space will also be loaded with social and symbolic meaning which would add importance to the area in general. It follows that, the spatial organizations that decide the morphology of the town can be considered as the result of the social context mediated by symbolic values and cultural traditions.

The study has made a reference to Islam because it has a very strong social conception expressed in the sense of belonging. It puts a great emphasis on the community and its enhancement and its prosperity reflected in the prosperity of the individual. It has a strong implication in maintaining sustainability through the preservation of social symbolic values. This has been well illustrated in the notion of responsibility and control through communal rules of conduct and sharing throughout the whole community.

At present the attempts made to maintain sustainable communities are made

mostly by the various governmental organisations and institutions rather than by the community itself in responding to its varied needs and aspirations.

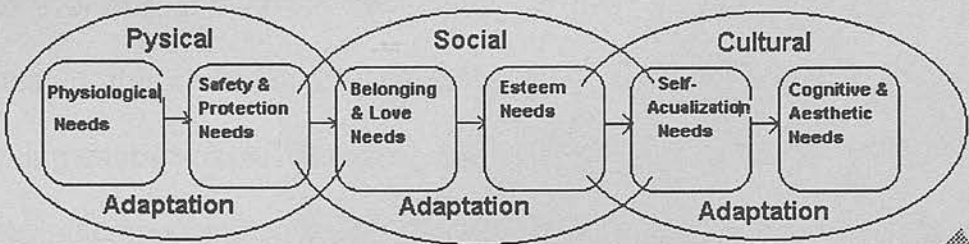
Throughout history Islamic societies have achieved a very high levels of self-determination through establishing shared values and social rules. These were mostly expressed in a variety of forms such as rituals, ceremonies, customs, life style and others. These were strongly reflected and accommodated in the physical structure of the Islamic cities. In addition they find strong expressions in the architectural and aesthetic quality of buildings particularly the house. This would be seen as a criteria for the perception of the authenticity of Islamic architecture seen as the expression of sense of belonging and love to all member of the Islamic community.

The message of this chapter is to confirm the significance of the social motivations and needs in the maintenance of the community structure and how to reflect this in the built environment and in architecture which responds to the peoples and their varying aspirations and needs.

# CHAPTER SEVEN

## ADAPTATION TO CULTURAL ENVIRONMENT

Motivated by: (A) Self-Actualization Needs. (B) Cognitive & Aesthetic Needs.



## CHAPTER SEVEN

### ADAPTATION TO CULTURAL ENVIRONMENT

Motivated by: (A) Self-Actualization Needs. (B) Cognitive & Aesthetic Needs.

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#### 7. 1. Culture:

##### 7. 1. 1. Introduction and Definition:

No one ever has, or ever will, see or observe culture. We only see its effects and products in the real life. In this situation one is making inferences about something unobservable. The individuals, their properties, relations and products are the indicators and referents for the collective term of culture. So, culture exists by definition. It is a conceptual summary of human phenomena. Culture was initially used in anthropology and was then adopted by other social sciences. In the Greek language there is no such special term for "culture" it is the same as "civilization."

According to Rapoport, there are *"three alternative very broad classes within which most definitions of culture seem to fall...these are: culture as a way of life typical of a group; culture as a system of symbols, meanings and schematic, transmitted through symbolic codes; and culture as a set of adaptive strategies for survival related to resources and ecology."* (Rapoport, 1980, p.9). In order to

understand the role of culture in the environment, it is more useful to ask not what these entities are but rather what they do to the environment and/or how they do it. To put it in other words, what culture does rather than what it is.

The first answer to what we raise up is that culture may be regarded as the distinctive means by which population maintain its identity. Characteristics and criteria that define groups which are relevant, valid, useful, and/or significant for the solution of particular problems related to their built environment. Because we assume that cultures change, there is also the question of how long a group maintains its identity without any change. The answer to this question in particular is that, the distinction between the core of culture (which changes little and slowly) and its periphery (which changes quickly) is potentially useful for the analysis and design of built form. These core elements maintain the identity of the group, particularly in situations of rapid culture change (Rapoport, 1982).

The second answer to the question about what culture does, is that it can be seen as a control mechanism (Geertz, 1983). Culture carries information and can be thought of as an analogue to DNA or, to use a different metaphor, a blueprint. Culture both directs how behaviour and artifacts are to be and transmits information by behavioural means, through various artifacts, including built environment.

The third answer is that one can understand culture as a structure or a framework which gives meaning to particulars. This seems very pertinent in



dealing with ecological approaches to culture. Culture, as the property of group exercises controls through information and rules. These produce a structure within which elements take on meaning, (Hanson, 1983).

It is culture which seems to define groups and leads to the latent aspects of activities. The different setting for these different groups, is reinforced by what Rapoport called "*secondary or modifying factors (Rapoport, 1969). . . site, climate, material, technology, economy, and the like . . . result[ing] in specificity and therefore the striking variety of built form.*" (Rapoport, 1984, p.159).

Culture is man's means of adaptation. It provides the technology for appropriating nature's energy and putting it to service. It is also the social ideological means of carrying out the process. In another way a culture also adjusts to other cultures in its particular milieu. The orienting process of development is the adaptation of these traits to the expropriation of nature's resources and to coping with outside cultural influence. New cultural traits arising through adaptation can be considered an adaptive advance.

There is no culture which has a monopoly on or even necessarily more kinds of adaptive improvements, than another. What is selectively advantageous for one may be simply ruinous for another. Nor are those cultures that we might consider higher in general evolutionary standing, necessarily more perfectly adapted to their environments than lower ones. Many great civilizations have fallen in the last 2000 years, even in the midst of material plenty, while the Eskimos



tenaciously maintained themselves in an incomparably more difficult habitat.

There is a tendency among various types of scientists and thinkers to involve culture whenever talking about human adaptation. It is this quality that makes biological and physiological factors of less importance in the course of adjustments to the environmental setting in the human species. Cultural adaptation has been viewed in different ways, the following is a brief review of the main schools of thought concerning this subject.

First, there is the historical view which considers culture as a closed system consisting of three interrelated subsystems; technical, sociological, and ideological. (L. White, 1940). The technical component here is the fundamental determinant of the others, and technological development is the impetus for general progress. White suggests that culture is taken out of a particular and historic context, without regard to the actual course of development or environmental circumstances. The general form of the social and ideological spheres of a culture is decided by its technological attainment. (L. White, 1940).

Second, both Sahlins and Service, (1960) (prominent authors in the field of cultural evolution) criticise this approach. They argue that the above approach is only valid when it is concerned with general evolution. For them, culture in specific historic environmental circumstances, is an open system entering into relation with nature and with other cultures. Adaptation to nature will shape culture's technology and its social and ideological components. Yet adaptation to

other cultures may shape society and ideology which in turn may act upon technology and determine its future course.

However, Sahlins and Service's criticism of the approach of Cultural Ecology is not justified. They suggested that the approach to cultural adaptation presented by the School of Cultural Ecology excludes the mutual influences between cultures which is not the case. They argue that "Cultural Ecology" ignores intercultural relations and that it must embrace the relation between cultures because culture by adaptation has made possible the exploitation of a great variety of the Earth's resources. See chapter two [man, culture and environment] the school of Cultural Ecology.

Sahlins and Service argue here that it is difficult to envisage any way in which societies learn by a means of acculturation. Such a means would enable societies to achieve better and more diversified exploitation of their own environmental resources. Another problem is that borrowed technology usually ignores differences in the habitat and subject people of various cultural settings in terms of their ecology.

### **7. 1. 2. Stability of Culture:**

A culture is an integrated organization of technology, social structure, and philosophy adjusted to the life problems posed by its natural habitat and by often competing cultures within its proximity. While adaptation is creative, it is also self-limiting, and leads the culture to a state of stability. A given population may vary through time in absolute numbers, but it is considered stable as long as its structure is maintained. Similarly, cultures are structured by their adaptive orientations and requirements, (Sahlins and Service, 1960). However we must not interpret stability as a constant and unchangeable status. It implies that evolution of culture always follows a particular pattern which is specific to that culture and hence distinguishes it from others.

Sahlins and Service, argue that specific changes may be required to maintain the structure, and in addition, traits may enter or leave the system with no consequent alteration of structure. They reveal that stabilization is a process induced and required by natural environmental factors, and the success of the process is determined by the rate and character of environmental modifications. The principle of stability means that culture persists unchanged and under the influence of external factors, acting to maintain its basic structure through adaptive modification.

### 7. 1. 3. Evolution of Culture:

Culture evolves and undergoes change achieving this through the concept of adaptation to the physical and social environments as well as the symbolic value of culture itself. In all these cases man is motivated by hierarchy of needs ranging from physiological, safety, belonging, self-esteem, self-actualization, and aesthetic and cognitive needs. Evolution of culture takes two directions, the first being to create diversity through adaptive modification, the other is a liner and generative progress, (Sahline and Service, 1960).

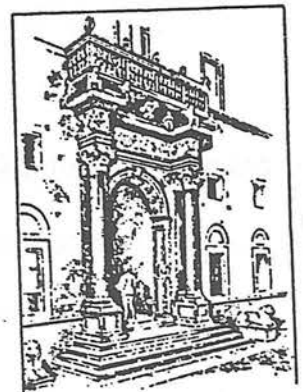
The core concept is expressed through collective consciousness, myths and legend, symbolic systems and language structure. Language is the most cultural factor in human cultural evolution. Higher levels of thinking are dependant on language whose structure influences the way people understand the environment, so that the picture of the world shifts from time to time. Symbolism on the other hand is a significant factor for the understanding of the culture. Everything can assume symbolic meaning: natural objects like stone, land, animals, the sun, moon, or man made objects like houses, mosques, cars etc. or even abstract forms like numbers or geometrical shapes. Each culture creates certain symbols through unconscious transformation of objects into symbols, and these can be visible or invisible features.

However, culture has to be understood in terms of its internal principles which are free from outside influences. The internal principles consist of the phenomenal

world of ecological environment and the deep hidden cognition affecting dimensions of human sub-consciousness which are beyond the understanding of the observer. Culture should be understood through deep analysis which traces the origin of its features. For instance two Arabs talking together will maintain a very close distance. In this case their interaction should be seen as adaptive behaviour conditioned by the built environment's compactness in response to the necessity of reducing the exposure to the heat. Similarly, the use of the Colour Green in arid areas is due to symbolic values because of the lack of this colour in these areas.

Therefore, the understanding of any of these cultural features can only be achieved through a complete use of the direct physical and subjective principle behind it. Nowadays, we approach culture through the study of human behaviour, cognition, language, religion and symbolic structure. Very recent development involves the study of the biological and the evolutionary forces as part of the effects on cultural environment.

When people enter a house, it is conceived as a transition from public to private. They experience a kind of ritual activity of entering the house and this is why decoration is put around the entrance. Decorations are not functional, you may enter without these decorations. This is something to do with the given symbolic value attached to the experience of entering your own territory, your own



**Figure 7.1:** Symbolic transition from public to private. (Source: B. Fletcher, *A history...*)

dwelling, that which is an essential part of architecture.

#### 7. 1. 4. How Does Culture Translate into Forms?:

There is no way of translating culture into built form. Nevertheless, some aspects of culture (life style, behaviour, activity systems, social institutions, social structures, status, power relationships, meaning and so on), are translated into some aspects of built form.

Culture is carried in the minds of people who actively perceive, judge and act and it is the people who generate cultural criteria and cognitive frameworks etc. It is the individual who adapts, succeeds, acts, behaves, and competes. People's actions are based on their cognitive environments (templates, schemata, etc.). These cognitive models can then be adjusted and revised as need arises. Culture is ultimately translated into form through what people do in their life according to what is in their minds and within their situation of circumstances. Culture provides the rules, information, instructions, schemata or blueprint about how to behave, how to do things and how to build.

The significance of culture is largely expressed in the development of learning so that by observing and interacting with members of the community young generations learn for example values and images of nature before experiencing nature itself. Culture therefore, helps to accelerate the processes of learning through its numerous values, symbols and folk language which are transmitted

from one generation to another.

Habitual behaviour, which is an important aspect of culture, translates culture into form. Groups identified by their cultures vary in this regard as they do in the degree of sharing of schemata or images. Culture is translated through human actions, through a series of intermediate steps, into built form. This is when built form is used actively for cultural purposes. This implies an active, and adaptive use of built form in culture so that people are active not only in creating it but in choosing among alternatives. Built form like other aspects of culture, is used to transmit information. In broader sense culture is what makes us human, distinguishes the human from the nonhuman realm. On the other hand, culture is what leads to the extraordinary variety and variability of groups.

The modern movement in architecture rejected the role of cultural variables in design. One example of an explicit rejection is based on the premise that since culture changes continually, and people are adaptive, they can and should adapt to any environment that is instrumentally satisfactory, (Sonnenfeld, 1976). This approach is (only) partly true. The aim of architecture is to produce built form to suit man's needs (climatic, social, cultural, etc.), and not the opposite which depends on the capability of man to adapt to any change in built form.

Various reasons support the position that people should adapt:

- (1) One can ask why people should be expected to do so.
- (2) One may argue that while some adaptations may be positive, or acceptable,



others may have negative consequences.

(3) Much of the change depends on the rate of adaptation and therefore on the need to modulate it.

(4) Supportive environment helps modulate a rate of change and may be essential where criticality is high.

(5) When change becomes slower, time becomes available for syncretism and creative adaptation.

(6) It can be argued that preservation of cultural diversities is important (an analogue of preserving genetic diversity in biology; there may be needed for a "cultural genepool").

(7) There is an "aesthetic" argument that varied built environments, cultural landscapes and lifestyles are desirable since they make the world richer and more complex, they also increase choice.

(8) One could suggest that culture-specific environments work better.  
(A.Rapoport, 1977 & 1982).

For example, water is very much valued by the Arab culture and it is much celebrated in their history of landscape design. Strongly associated with this, is the greenery of vegetation, and thus a paradise to a nomadic desert Arab would

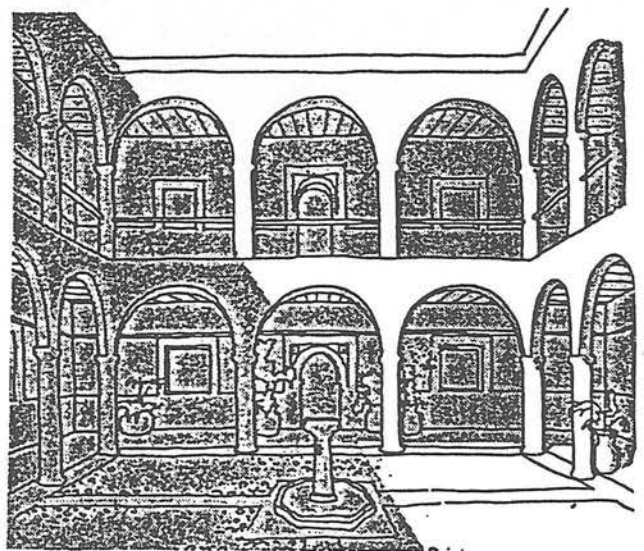


Figure 7.2: Typical Arab house, open to the sky, with fountain and greenery of vegetation. (Source: M. Evans, 1980 *Housing, Climate and...*)

be the oasis. People are driven by the meaning of symbols. The Colour Green has become the symbol of fertility of nature to most Arab culture.

For many societies, especially in the Middle East, the open courtyard was particularly valued in countries with clear skies where people developed strong perceptions of the sky. A courtyard opened to the clear sky signifying the link with the external space of heaven. This is an important feature in the crowded city where the link to sky needed reinforcing.

The debate above was about culture in general or as a whole, but now we have to tackle other aspects of culture, or what we may call the mechanism of culture. These aspects or mechanisms have an important role in keeping culture alive and survive throughout time. These are cognition, perception, schema, and aesthetic values etc. The study will start with cognition because it is the holistic element which contains the others as well.

## 7. 2. Cognition:

### 7. 2. 1. Introduction:

The vast collection of building forms powerfully suggests that it is not the site, climate, or materials that decide either the way of life or the habitat. Examples from numerous areas of the world show that dwellings and settlements are not only the outcomes of physical forces, particularly since form often changes in areas where physical aspects have not been changed.

According to R. Arnheim (1970), a typical image of cognition was referred to the intelligence activity. He states that: *"The business of creating concepts, accumulating knowledge, connecting, separating and inferring was referred to the (higher) cognitive functions of the mind"* (R. Arnheim, 1970). It was also described as *"memory, mental imagery, imagination, attention, comprehension, suggestibility, aesthetic appreciation, forces of will, moral sentiments, motor skills, and judgement of visual space"* (G. Shouksmith, 1970).

Recently, as Neisser (1976) has mentioned, a new field of cognitive psychology has come into being. It studies perception, memory, attention, pattern recognition, problem solving, the psychology of language, cognitive development and several other problems that had remained latent for half a century. Although we find ourselves with many of studies that insist on the division of the cognitive process, at the same time we know that the point of agreement is that to cope with the

world, the mind must gather information and must process it. Gathering information is related to perception, whereas processing is related to cognition. However, cognition is not limited to processing, it also consists of intelligence and problem solving which include understanding, reasoning, judging, etc. "*Cognition is the activity of knowing: the acquisition, organisation and the use of knowledge*" (U. Neisser, 1976).

### 7. 2. 2. Recognition:

The shift between sensing the environment and recognizing it is not yet clear cut. However, it is natural to distinguish between the stimulus object a person receives through his eyes and the treatment to which this object is subjected to, recognition. Such a view seems well supported by elementary facts: the percept turns out not to be the physical equivalent of the image in the retina of the eye. Therefore, it is natural enough to attribute the difference to manipulations taking place after the sense of vision has done its work, (U. Neisser, 1976).

Neisser stated that, if the percept is known to the perceived, recognition would be started automatically within the time of seeing, if not, recognition would take time to happen. It appears, however, that other aspects of visual perception are more difficult to illustrate. Consequently, certain problems arise in the circumstance of the familiar phenomenon of illusion which reveals that even perceived things are not interpreted correctly. In this case, the stimulus information to a large degree decides what a person sees or tends to see.

Perception itself seems to depend on the skills and experience of the perceived; on what he knows in advance (U. Neisser, 1976).

### 7. 2. 3. Cognition and Culture:

There is little doubt on how our cognitive backgrounds such as aesthetic appreciation, beliefs of different phenomena etc. are determined by the socio-cultural background in which they are developed. Whether we agree or not with others, the cognitive structure and background remains within the framework of socially shared meanings and assumptions. Within its range are established the socio-cultural adaptations as well as norms, and means and values of environmental objects. The interaction between cognition and culture is highly complex. Human cognition is partly created by the socio-cultural context and in turn it partly creates it.

Triandis (1972), argues that people in different cultures experience differently the environment in terms of cognitive experience. Bartlet (1932) in his work On Selective Remembering, was able to show how the selection and modification of what is remembered may depend upon the cultural setting of the remembered material. Therefore, culture affects the cognitive process and comes, at the end to be a part of it. According to Tajfel (1977), the two major determinants of a person's views of the world (his cognitive selection and organization) are: (1) The social values in their permanent state of conflicts and change. (2) The social consensus (within a culture) and the change in it.

J. Piaget (1963) seems to be decisive as demonstrating the socio-cultural factor as determinant of human cognition because if it were not for the fact that some *"basic rules of viewing the world are determinants by society, the individual could not move then from one narrow 'socio-centrism' to another"* (J. Piaget, 1963). Nevertheless, to a certain extent, we cannot ignore that people live in a coherent culture. People have encountered an almost standardized set of social experiences and they have developed anticipations of common events and shared meanings. Therefore, socio-cultural established schemata mediate to a large extent our cognition.

According to A. H. Esser (1973), socio-cultural cognition is a component of the central nervous system functioning which includes the most evolved cognitive processes. He cites Von Foster's definition that *"the hierarchy of mechanisms, transformation operations and process that led from sensation over perception of particulars to the manipulation of generalized internal representations of the perceived, as well as the inverse transformation that led from general command to specific actions, or from general concepts to specific utterances."* This means that the socio-cultural factor interferes with the cognitive process and activity such as selection, needs, evaluation, judgements, categorization and others; it also manifests in the way societies in different places and times interpret and respond to their environment. It thus appears that people's cognitive needs and experiences are heavily influenced by the values of their particular cultures. Finally, this view accepts the assumption that environmental objects embody information about the specific way in which given groups of people define and

solve problems.

#### 7. 2. 4. Cognitive Needs:

In his book of Motivation and personality, Maslow (1954) developed the idea of a person's cognitive needs. He argued that the reason that we are aware of cognitive impulses, their dynamics and pathologies is that they are important in a person's life. He justifies that *"the overcoming of obstacles . . . the wider spread of occurrence (cross-culture), the never dying (though weak), instant pressure, the need for gratification . . . this need is the fullest development of human potentialities . . . "*

Maslow proposed a hierarchy of human needs (physiology, safety, belonging, esteem and actualization), which are not separate from the basic needs because *"the desire to know and to understand are themselves cognitive, i.e. having a striving character . . . and we are as much as personality needs as the basic needs"* (A. Maslow, 1968). He then observed that the hunger to know and to understand increases, so *"even after we know, we are impelled to know more and more minutely and microscopically."* We should note that it would be a mistake to think of this as a rigid hierarchy. *"Most people, for example, could think of instances when they have stayed out much longer than anticipated and have resisted the pang of hunger. Instances of higher needs being met before basic needs are relatively common, even if this is not the typical situation."* (A. Maslow, 1968).



In this sense, a person's cognitive needs are both the instinctive needs to make sense of one's environment as well as the need to know for the sake of knowing. Maslow (1968) pointed to the need to know and its importance as deriving from the fact that a patient finds himself in a situation where he must struggle and fight the illness in order to live. Similarly, a person finds himself in an environment within which he must adapt in the most efficient way to survive. This views cognition by relating it to the human needs that are more basic and holistic than what it requires by the particular activity in which a person is engaged at the time.

In the same view, from a biological perspective, Kaplan (1973) argues that *"over the course of evolution those who survived and reproduced are people who have had the necessary carriages of living. These skills are, (1) the ability to know where one is. (2) the ability to know what is likely to happen next, (3) the ability to determine the goodness or badness of what is likely to happen next, and (4) the ability to decide and take alternative courses of action"* (Kaplan, (1973) according to Altman and Chemers, 1984, p.49). Kaplan's provocative statement of the postulated evolutionary basis of peoples' abilities to develop successful environmental knowledge can be summarized as follows: *"He (Man) is a kind of animal that has lived by his wits over millions of years. He is a kind of animal that lives by what he knows and by what he can guess and by the plans he makes"* (Kaplan, 1973, p.77). The greater the knowledge we have about the environment, the greater are the chances that people will survive, readjust and reproduce in it.

### 7. 2. 5. Cognition and Adaptation:

Piaget (1977), argues that intelligence is one form of adaptation. Although the latter is natural to all living species, intelligence is not inherent in a strict sense, but is formed through the constructive interaction between man and his environment. According to Piaget, the basis of development and the motivation for all elements is adaptation which, more than mere survival, includes development from lower to higher order of cognitive functioning.

We do inherit a mode of cognitive functioning that includes two major performers, namely assimilation and accommodation. Assimilation is the incorporation of all the different experiences in our lives, while accommodation is the readjustment of the new ideas in order to take in more of the external world. In another words, assimilation is the extent to which a new item of information a person receives from his environment can somehow be made to fit in with the background of experiences one already possesses. If the new item of information can not be related, in one way or another, to man's experiences, it would remain meaningless or irrelevant. Accommodation is the obverse process, it refers to the changes in the ways from which new information is obtained and how to make adjustment between the new and the old information to have them fit in one structure. Therefore, these two functions together, ensure a person's ability to rearrange and reorganize himself with the incoming possibilities and uncertainties of the environment and therefore his ability for adaptation.

In this sense, it appears that cognition is a very dynamic process in which stability and change interacts to provide the two necessary activities of a successful fit between a person and his environment. Therefore, schemata and the way cognition process, a person's experience into ideals and beliefs, do not necessarily exclude the possibility of change. Yet no change would be possible unless the mind assimilates the new inputs or unless the new inputs are made to "fit" within the background of cognitive structures that are already in existence.

### 7. 3. Perception:

#### 7. 3. 1. Introduction:

There is an agreement among most studies of perception, that before making any evaluation, judgement, decision, or any choice about the environmental objects, people must in the early stages perceive them. Perception then *"comes to be the first essential mechanism linking people and environment, since one must perceive problems and opportunities before they can be evaluated"* (A. Rapoport, 1977).

All our senses (vision, auditory, olfactory, tactile and tasting) are means to get information. They receive first hand information about the properties of the environment from their environment. There is some justification for concentrating on visual perception, because vision is arguably the most acute. People can discriminate more between the signals through vision than through other senses.

The amount of information carried by this channel is believed to be correspondingly high.

Perception is commonly used in the sense of "seen" because the function of seeing is argued to have the essential role for gathering information. Most theories on perception have been constructed with a sense of vision in mind. According to S. Kitouni (1988), the stimulus is first received by the sensory organs. Second it is transformed into neural impulses and then carried through the nerves to an area of the brain called the cortex. She cites P. F. Smith explanation that a person's *"body is equipped with a number of highly sensitive receptors which convert energy emitted by the environment into energy of a different nature which conforms to the structural code of the brain"* (P. F. Smith, 1974 cited by S. Kitouni, 1988).

### **7. 3. 2. Perception and Selectivity:**

The role of selectivity on perceptual ideas (cognitive process) has been for many years one central issue in psychological theory. The study will provide here a brief summary in a few general statements which deal directly with this process. *"As soon as the information reaches the brain, it gives recall to several schemata, which are juxtaposed to the new information. This process is by no means a simple one"* (P. F. Smith, 1974). Cognition is found upon juxtaposition of schemata that makes people experience buildings, landscapes and other environment objects. At the same time we have to know that among all the

features of an object only certain characteristics are experienced. In other words, a person tends to ignore certain dissimilarities between individual objects if those objects are equivalent to one another for certain purposes.

The main function of selecting appears to reside in its role as a tool in systematizing the environment. By that *"few characteristics of an object are enough to lead its identification as a whole"* (A. Rapoport, 1974). Furthermore, to systematize is to simplify the enormous amount of information received from the environment. This aspect of simplification has been referred to by Bruner (1957) as *"going beyond the information given."* The information, Bruner suggests, must be gathered to fit the existing system of categories. Various characteristics of objects and events in the surrounding world are selected to be made a part of the structure of experience and skills that a person already has at his disposal. It follows that *"Selectivity is (then) an activity in which both the immediate past and the remote past are brought to bear upon the present"* (U. Neisser, 1976). In this sense selectivity is viewed as a way to adjust new information and events with past ones.

### 7. 3. 3. Perception and Expectancy:

Expectancy develops when a person evolves his own memory based on what he has faced in earlier situations in order to construct in advance information about the unknown event. The previously acquired information causes anticipatory reactions to the extent that one essential function of knowing is to bring about foresight (J. Piaget, 1971). In this manner, correct expectation will help perception, whereas inappropriate visual concepts will delay and impede it (R. Arnheim, 1970).

Furthermore, if a person's expectation is correct, he will react immediately without other thought. On the other hand, perception would be false when a person's expectations turn out to be wrong for a certain situation. R. Arnheim argued that expectancies show up even more dramatically when, for example, a person sees an object, a place or an event after a long time of absence. The familiar objects look unnaturally deformed until it is discovered that the object is not the same at all but a strange one. On the other hand the unfamiliar ones, at which point the stoop disappears because the memory basis of references from which they derive, no longer exists.

It should be noticed that effects of such expectancies depend not simply on how often their prototypes have been met in the past or on how they have been used, but quite importantly on what the nature of the given context seems to call for. What one expects to see depends considerably on what belongs to that particular

place.

### 7. 3. 4. Between Perception and Cognition:

Traditional thinkers, according to R. Arnheim (1970), viewed perception and cognition as opponents, in need of each other but different from each other in principle. Thinking consists of intellectual operations performed on perceptual material. The material becomes non perceptual from the moment when thinking has transformed the raw percepts into concepts. Arnheim criticized the last point by arguing that *"operation called, thinking is not the privilege of the mental process above and beyond perception but essential ingredients of perception itself"* (R. Arnheim, 1970). For Arnheim there is no difference between what happens when a person looks at the world directly and when he/she sits with his eyes closed and "thinks." It is difficult to separate the cognitive and perceptual process in his work.

Looking at it from a different point of view A. Rapoport (1974), states some differences between perception and cognition. The proposed differences correspond to that between direct (perception) and indirect perception (cognition). Further, *"perception is relatively stable, consistent, enduring . . . there is less constancy at the cognitive level"* (A. Rapoport, 1973).

Yet a third view can be found in Neisser's work (1970), where he suggests that perception and cognition are both parts of one unique cycle. He assumed that



cognition and perceptual processes are successive and affect each other, whereas the function of an expected stimulus is to initiate the cycle of perception.

The different views on perception and cognition are complimentary in fact as Neisser had concluded. Those who treat perception and cognition as two functions in need of each other are right; those who find them embedded are also right and this along with those who suggest that cognition and perception interact. *"Each of these views has focused on a single aspect of what is normally a continuous and cyclic activity"* (U. Neisser, 1976).

Cognition is a broader term which includes perception. It is associated with psychological processes by which human beings obtain, store, use and operate upon information. It consists of sensing, perceiving, remembering, deciding and other types of psychological processes and is intimately related to experience. Perception, by comparison, is a more specific term, it is the psychological function that enables the individual to collect sensory stimulation into organized and coherent experiences.

## 7. 4. Schema:

### 7. 4. 1. Introduction:

Neisser, (1976) pointed out that, the term "schema" has already been used rather with a variety of meanings. For instance, it has been referred to a person's intelligence for which the literature is replete with a series of different definitions. The term has been laid down by the perceptual input and the process of a person's intellectual development.

The schema has also been used to refer to a person's visual perception on the one hand, and to a person's different sense modalities on the other. Vernon argues that schemata need not to be just visual, "*we have auditory images, smell images . . . also tactile imagery and taste images*" (D. Vernon, 1969).

A person may employ all the imagery of his sense modalities in order to remember and recognize and this implies recalling his schema. Moreover, the term has been defined as a sensory motor response to a particular set of environmental cues. These responses help to structure behaviour by being stored in the memory, later to be reactivated when a set of similar cues or similar events come into view. The importance of this conception is to describe how actions are controlled by a person's internal representations of the world.

Finally, it seems that there is no better definition than the one given by Neisser

(1976): *"A schema is that portion of the entire perceptual cycle which is internal to the perceiver, modifiable by experience, and somehow specific to what is being perceived."*

#### **7. 4. 2. Schemata - Biological View:**

From a biological point of view, schemata are a part of the nervous system. They are some active arrays of physiological structures and processes which include the brain, sense modalities etc. Within the brain there are entities whose activities account for the modifiability and organization of a schema such as assemblages of neurons and functional hierarchies. This general system provides different subsystems, which in turn, provide various kinds of information storage. The aim is to cover the function of a schema which involves the environment rather than the biological function which involves the nervous system. Nevertheless, we know that perception involves both the environment and the nervous system (Neisser, 1976).

#### **7. 4. 3. Schemata and Images:**

Neisser (1976), argued that images are sources of perception although perceiving is not imagining. He suggested that images are the anticipatory phases of the cognitive activity which a person has detached from the cognitive process for certain purposes. Images may occur during the ongoing cognitive activity but not through its whole process and definitely not through its object. The experience

of having an image is just the inner aspect of readiness to perceive the imagined object or the imagined event. Thus, *"one would certainly expect to find differences in the accuracy, scope and detail of the information they anticipate"* (Neisser, 1976).

A person can be ready to see an object only by images. He is ready to expect the information that such an unlikely environmental object would offer. In that sense, a person may fail in having the right image, he could succeed only if the proper schema has been evoked at the time of recall. Schemata take an inevitably prolonged period to operate during which a person recalls old information and uses his experiences in different situations. Images, on the contrary, may take place in a fraction of a second.

In addition, Neisser argues that schemata are the result of the higher work of the cognitive process. They are primarily social phenomena that have emerged through the practices and institution of the culture in which a person grows up. Images, however, do not represent such characteristics or situations.

#### **7. 4. 4. Role and Development of Schemata:**

As there are constantly new sets of information, new established patterns, new experiences and new steps of knowledge, the schema may become altered, reviewed or modified. The modification is not a radical change of past information, but it is a review and a matter of checking out. As P. F. Smith wrote,

*"the process of building up the matrix of memory is far from being constant, and the basic schemata of memory are enriched by detail"* (P. F. Smith, 1974). Each schema accepts new information and directs explanatory activities that make the right sort of information available and may direct movements to search for more. The change itself *"is not a matter of making an inner replica where none existed before, but of altering the perceptual cycle so that the next act will run a different course"* (U. Neisser, 1976).

Therefore, the development of schemata continues by what J. Piaget called the system of accommodation and assimilation. A person has become what he is by virtue of what he has accumulated of knowledge in the past, of his surroundings and the world. He further creates and changes himself by what he assimilates of new inputs in the present. With further information, schemata may take arrangement of fewer idiosyncrasies and then become more accurate representations of reality.

Schemata in different situations determine what is perceived and is guided by expectancies that are altered by consequences. In other words, the new information is essentially a selection among alternatives. For instance, R. Arnheim found that all perceptual inputs are necessarily the product of a categorization process. *"The influence of memory on the perception is indeed powerful."* However, certain primitive identities within perception must be innate and not learned. Those unlearned categories could be at work without direct perception themselves. The schemata begin with the exploration of the

environment, the coding of information and the gradual filling in of details. As a result, information is reevaluated and schemata are modified, although it must be noted that schemata are resistant to change.

#### **7. 4. 5. Schemata: Shared or Unique:**

New ideas and experiences will gradually develop and change schemata. Everyone's experience is said to be different. People have different capacities of knowledge and different views from one another. In his work "The psychology of personal construct" (1955), G. Kelly assumed that each experience as it was absorbed by the person, was interpreted in the light of his previous personal experiences until he gave his own sense to the environment. As *"a person is able of being his own [scientist]"* (G. Kelly, 1955).

In that sense schemata do not become free from personal opinions or personal parameters, they represent a process where people shape, reconstruct and organize the environment into a meaningful personal pattern. That is true, but not the whole truth; all people perceive the same environmental features even if they disagree about their offers. Matters can be clearly explained by the fact that the personal creativity is rather a disposition which acts like a biased interpretative process and is a reflection of the receptivity that a person may have developed towards different environments. Therefore, personal schemata are just indicators of people's different constructs in order to think about the environment and to endow it with meaning.

Finally, schemata are the sums of the universal, the shared and the unique experience of the world and the environment. The conclusion of what is said, *"means that the worlds we have lived are not so different after all and that the initial schema equipped each person to notice some of the same things"* (U. Neisser, 1976).

#### 7. 4. 6. Spatial Schema:

In addition to what we said, a schema is principally concerned with the reduction of environmental complexities into a cognitive order. Order here means *"the way man categorizes the environment . . . and what elements he puts in them . . . It also includes the relation of the categories to one another and their overall organization"* (A. Whyte, 1977). In other words, order leads a person to identification and location of places by imposing a structure in the environment. It further *"assumes that people store the environmental information in simplified forms and in relation to other information they already have"* (S. Kaplan, 1973).

Spatial schemata are often discussed as if they were images. This might seem to be as true as far as the cognitive process suggests that the function of perception be limited to the way it informs us about environmental objects as merely physical ones. On the contrary, the relation between environmental percepts and man lies beyond environmental objects, places and events are meaningful. In addition, once a person becomes familiar with the codes by which data have appeared in the environment, he will be expected to be wider and



deeper in experiences.

S. Kaplan, (1973) suggests that a well structured spatial schema may be essential for man's need to adapt and survive. In that sense, Kaplan assumed that *"the occasional allegation that you cannot get (there) from (here) would be common indeed if people always took easy paths and direct location."* It thus appears that without the attribution of people's cognitive needs to know and to understand a spatial schema is likely to be highly incomplete.

In that sense, we expect people to be both curious and skilful in terms of their manipulation of their environment and their world. Spatial schemata are not, however, particularly well formed or discriminating concepts *"man is not randomly curious as much as curious with respect to what he might already know something about and with respect to what he might need to know something about"* (S. Kaplan, 1973)

The schema accepts information as it becomes available at sensory surfaces and is changed, reevaluated, or checked by the new information. It ensures the continuity of perception over time. Because schemata are anticipations, they are the mediums by which the past affects the future. Moreover, the information already acquired determines, to some extent, what will be assimilated next as new information. *"The schema, therefore, plays an ongoing activity which relates a person to his environment"* (U. Neisser, 1976).

#### 7. 4. 7. The Consensus:

H. Tajfel (1977) clarifies the consensus as the conventional meaning, without which the *"stimuli would not have been selected for attention or organized in (this) particular manner."* He postulated that the social consensus takes many forms. The most basic of which is the wide consensus within a culture about the interpretation of the information given to the person by the environment. This shows that people within a particular society share some conventional agreement or meaning attributed to their views of the environment and to the world. However, it hardly implies that *"they agree in all respects, but only share a common core of consensus"* (Altman and Chemers, 1984). So that *"they act as cognitively blind receivers of our [their cultural inheritance]"* (H. Tajfel, 1977).

The essence of the consensus may be related to the various aspects of environmental information which become salient because of the needs and customs of a society. H. Tajfel debated that one's faith in the existence of a phenomenon may be accepted with no alternatives to judgement. He added, that this may be due to the very high social consensus about the nature of a phenomenon, independently of whether it is thought of as "physical," "natural," or "social." There are, Tajfel noted, many examples both in the history of science and in different cultures, where the means of "physical" testing (sense modalities) which are, in principle, available are not used because of the very high (or complete) consensus about the nature of the phenomenon. In addition, the more powerful the weight of social consensus about it, the more likely it is that a

person selects environmental cues according to the cognitive alternatives supplied to him by his socio-cultural context.

This does not mean that change in consensus does not occur. On the contrary, like any schema, it can be reinterpreted, reviewed or reevaluated but unlike other schemata, it is more powerfully resistant to change, although we have already said that schemata are resistant to change.

Therefore, here one may suggest that the environment can be considered as a necessary cognitive and social mechanism for coping. For example, a person's everyday approach to environmental objects and places is made through socio-cultural modes of interpretations. The domination of this interpretation, as A. Whyte (1977) explains lies upon the way they are selected, organized, simplified and made into coherent meanings. It eventually appears that *"perceivers do not go beyond the information given, but cultures go beyond the elementary additional information available"* (U. Neisser, 1976). We should, at the end, assume that the information is not just syntax or grammar for giving particular messages, but it has a deep structure. This structure stems from the socio-cultural context and the need to organize man in the society.

Cognition is not just the activity of knowing but also of attributing meaning to the environment and interacting with its different elements. Man's schemata accept new ideas but these have to be made to "fit in" with his existing cognitive structure. This is to a large extent affected by his socio-cultural context. Cognition

is, therefore, the ultimate mechanism linking a person to his environment where the latter become embedded with values and meaning.

It thus appears that the environment has been and is still being shaped and modified to meet man's different needs. Moreover, no matter how man started to build, or with what kind of elements he used to build, there is no little doubt that he built to satisfy his needs, and to suit his adaptation.

## **7. 5. Aesthetic Values:**

### **7. 5. 1. Introduction:**

The topic of aesthetic is as old as philosophy, nevertheless, it takes its current form from the famous philosopher Kant, who suggest that the sense of beauty is a different and independent employment of the human mind comparable to moral and scientific understanding. Kant's division of the mental faculties into theoretical, practical and aesthetic or, as he put it, understanding, practical reason and judgement, provided the starting point for all later investigations and gave to aesthetics the central position in philosophy which it occupied through much of the nineteenth century.

Through its impersonal and functional qualities architecture stands apart from the other arts, seeming to require quite peculiar attitudes, not only for its creation, but also for its enjoyment. Generalized theories of aesthetic interest, such as those

of Kant and Schopenhauer, tend to give rather odd accounts of architecture. Those philosophers who have treated the problem seriously - among whom Hegel is perhaps the most prominent, have often described the appreciation of architecture in terms inappropriate to other forms of art.

A further distinguishing feature of architecture is its highly localized quality. Buildings are important features of their own environment, as their environment is as important features of them. Therefore, the value of the building is decided not only by a pure aesthetic consideration but also, and with regard to basic human needs perhaps more importantly, by the degree to which it performs its function. Both are essential qualities.

*"Buildings are places where human beings live, work and worship and a certain form is imposed from the outset by the needs and desires that a building is designed to fulfil.... Functionalism has many forms. Its most popular form is the aesthetic theory, that true beauty in architecture consists in the adapting of form to function. For the sake of argument, however, we might envisage a functionalist theory of exemplary crudeness, which argues that, since architecture is essentially a means to an end, we appreciate buildings as [means]." (R. Scruton, 1979, pp.5&6).*

Architecture is directly one application of that sense of what fits which regulates every appearance of daily existence. Therefore, in proposing an aesthetic of

architecture, at least what one must be proposing is an aesthetic of everyday life. One has moved away from the realm of high art towards that of common practical wisdom. Roger Scruton in his book The Aesthetics of Architecture cited that: a distinguished architect has written:

*"Beauty is a consequential thing, a product of solving problems correctly. It is unreal as a goal. Preoccupation with aesthetics leads to arbitrary design, to buildings which take a certain form because the designer [likes the way it looks]. No successful architecture can be formulated on a generalized system of aesthetics."* (R. Scruton, 1979, p.25).

In all these activities it has been suggested that the aim is to accomplish a clear or rational design a specification or blueprint which will lead to the greatest satisfaction among those who use the finished object. The first task in design, therefore, is to understand the needs of a potential client. The architect must then study the interaction of those needs and finally devise a mechanism which is as responsive to them as possible. Beauty may be a consequence of Man's activity, as well as being part of his primary aim.

The quality of aesthetics is connected with the pleasurable nature of the perception found from the environment. It includes the arousal of one's perceptual systems, is multidimensional, and results from the colours, odours, sounds and textures of the environment. Formal aesthetics in architecture are concerned with the

appreciation of shapes, rhythms, complexities, and sequences of the visual world, although the concept can be extended to the sonic, olfactory and haptic worlds. The appreciations of the associated meanings of the environment that give people's pleasure is the subject matter of symbolic aesthetics.

### **7. 5. 2. Aesthetic and Symbolic Meaning:**

A symbol is something that stands for something else. It may do this as the result of an association, a convention, or even an accident (Burchard and Bush-Brown, 1966). A symbol is the result of a cognitive process by which an object gets a connotation beyond its instrumental use.

There was an agreement between scientists that Man is a symbol-making animal before he was a tool-making animal, as a result he accomplished specialization in myth, religion, and ritual before he did in material aspects. He put his energy into symbolic rather than utilitarian forms even when he was hardly starting, (Rapoport, 1969).

The built environment conveys symbolic meaning in a subtle ways. The correspondence between a building pattern or set of patterns and what is signified has to be learned. Sometimes this is done consciously, but often it is unconsciously. Architects, among others, often attempt to establish new symbol systems. To get them accepted, they have to educate others about the set of associations between the new patterns - the symbol - and the signified. This may



involve advertising, polemic writing, or direct teaching. Within any field, elite groups are likely to control some of this process (Barthes, 1967), but other meanings are largely unconsciously developed.

### **7. 5. 3. The Purpose of the Architectural Symbols:**

Langer, (1953) cited that: "Human beings are symbol managers." One way in which people communicate with one another is via the symbols. Architectural symbolism is one set of nonverbal mechanisms that people use to communicate messages about themselves, their backgrounds, social status and world views to others. Other material artifacts of everyday life that carry such symbolic meanings include automobiles, clothing, furniture and furnishings, and even household pets.

From the theory of motivation we know that when people are struggling for survival, the symbolic aesthetics of the environment will not be the focus of attention unless these help them to survive. The physical character of the environment will still tell messages about the status of the people concerned and they are likely to be well aware of this, but they will have little energy or inclination to act to purposively change the symbolism. For people whose prime concern is safety, architectural variables become more important, particularly those associated with symbolic barriers representing territorial demarcation. It is in fulfilling belonging and esteem needs however that architectural symbols are particularly important.

The symbols that people choose to have around them may reflect their perceptions of who they are or may reflect their perceptions of who they aspire to be or may simply reflect a rejection of the past. If one aspires to be a member of a group, then the symbols associated with that group become particularly important. It should be noted, however, that the perception of the important symbols associated with a group might well differ between those outside the group and those who are members. If we have full membership in a group - be it socioeconomic, cultural, or ethnic - the symbols of membership become less important. Therefore, the environmental symbols chosen are more likely to reflect personality or other idiosyncrasies. This is also true for those whose needs are primarily self-actualization and cognitive and aesthetic ones.

Shapes and patterns that an architectural style comprises carry meaning. In certain cultures, specific shapes, such as a circle, or particular patterns such as symmetry, have association meanings themselves, but these meanings have been largely lost in the last decades, except in certain places where the linkage between pattern and meaning has become a social convention. In architecture, it is principally the style of a building that carries symbolic meaning.

Colours of buildings, surfaces and smaller artifacts carry symbolic meaning - often by explicit social conventions. These conventions may be understood by broad segments of a population, although the antecedents of the convention may be unknown. Colour conventions differ from society to society. For example, in traditional Beijing, bright colours were reserved for palaces, temples, and other

buildings housing rituals; ordinary buildings were artificially made as colourless as possible. Colour was a symbol of status. The colours are associated with building types and population groups in a complex set of ways, but the evidence for these links is highly contradictory (Hayward, 1974; Porter and Mikellides, 1976). Often it seems that it is not specific colours that carry messages, but deviations from customs. The effect of deviations from norms has to be understood as much as the affective meanings of colours themselves. (R. Scruton, 1979).

Some places are peculiarly associated with certain people or events. A particular setting may have symbolic meaning not because of its physical attributes, but because of the events that took place there. The building becomes a symbol of the events. These events may have been recurrent ones, or there may have been a single event.

An understanding of symbolic aesthetics involves an understanding of the positive and negative attitudes that people have about the symbolic meanings available in the built environment. An attitude results from combining a belief about something with a value postulate about it. Values are related to motivations, for they define the attractive and repulsive elements of the world. In architecture, anything a person desires or compliments has a positive value for that individual. Anything that is disdained has a negative value. Values represent a link among a person's emotions, motivations and behaviour.

## **7. 6. Environmental Principals:**

### **7. 6. 1. Introduction:**

The study claims that architectural patterns and elements were the result of the transformation of physical characteristics of the environment into symbolic and cultural features. In this matter it is appropriate here to relate the aesthetic qualities of cultural features to their generative origins. The natural surroundings are the sources from where these features emerged and which gave them their meaning or perception. Many contemporary design views have overlooked this crucial point which has resulted in many pressures being placed on different cultures or societies and has led to undesirable shifts in the way people perceive their natural environment.

The idea of relating cultural and perceptual values to nature is largely attributed to the school of Cultural Ecology which was initiated by Julian Steward. Cultural Ecology studies the way in which the natural environment informs our values, behaviour patterns and cultural development through a series of perceptions and responses.

According to this school "ecology" refers to the process of adaptation to an environment defined as the interacting structure of life encompassing all plant and animal life and the ways in which these interrelate within a specific territory (Stewards, 1972). The school puts forward a framework wherein all aspects of

environmental and cultural relations are interlinked, effecting and interrelating with one another. For example many mythological and spiritual ideas have evolved through responses to perceptions of the environment within which people live. That is, a specific natural environment effects a specific people in such a way that a series of behaviour patterns is set up leading to the formation of mythology and religious beliefs. Such is the basis which forms the evolution of different cultural groups across the world. When natural conditions such as climate or local environment change for some reason so do people's perceptions and responses and therefore different values and behaviour patterns emerge.

This is evident in the case of Arab people through the way in which their environment has informed their social way of life and culture. As dwellers of the desert and the arid areas, the Arab people have responded to the environmental conditions such as the extreme heat, arid conditions and the scarcity of water. This has resulted in myth and symbolism being built up around their perception of water. As a valuable source of life, water is precious and therefore should not be wasted. Similarly plantation and trees became symbolic and therefore have acquired religious significance.

It is possible to assert that almost all forms of symbolic and aesthetic values developed in response to people's perception of their physical setting. What is important is the way in which natural characteristics have been transformed into perceptions. The study has emphasized the significance of understanding the concepts of transformation and process. In order to achieve this it has been

suggested that man and the various components of a specific environment can be seen as forming a system of transformation or a structure. The real implication of this is that these various components are engaged in a system of interrelationships and therefore their impacts on each another are not arbitrary but are an expression of that system.

The development process of the thesis has yielded a number of salient notions which emerged from the course of the research itself rather than been imposed by the author or representing his own predilections. The author therefore argues that these notions have acquired the state of principal characteristics within a concrete architectural theorisation from which design criteria should develop.

It is however not the intention to argue for contextual or regional architecture. The study asserts that these principal notions are universally valid and that consideration of the regional identity lies in the heart of all designs. The implication drawn from this assertion is that architecture should not be driven to the various interpretations of the schools and 'isms' that currently appear to guide the designer's work in general.

The following section is dedicated to the introduction of these principal notions or components.

## 7. 6. 2. System and Structure

The idea of adaptation implies that something is adapting to something else. In the case of physical adaptation, for example, this would imply adaptation to a constellation of factors and characteristics of the natural environment. It could be suggested that the outcome of the adaptation is a form of mechanism of interaction which maintains a regularity and semiological coexistence between man and the symbols constituents of the environment.

It is therefore, possible to consider both man and the various environmental factors as being engaged in a systematic relationship. In that it is very common to find out that adaptation in two geographical areas which share similar physical attributes would result in similar world view and cultural interpretation though produce variation in the artifacts and physical objects. The idea of system introduced as a different way of understanding the universe and the scientific explanation in physics which prevailed for some time (Bertalanffy, 1968). The universe and the environment were seen as offering chunks of information and hence each element in the universe would be studied as a unique entity.

According to Bertalanffy who initiated General System Theory during the fifties, a system is a complex made up of entities of lesser order, forming patterns of relationships that are in some sense regular. Since very simple and irreducible objects have nowhere been discovered, it is clear that there exists nothing which in Bertalanffy's terms could not be described as a system. The application of



system thinking has extended to numerous areas and disciplines, particularly the social sciences and biology where systems are considered to be open. Similarly the environment could be seen as consisting of a number of entities tied with particular relationships which are governed by laws.

Very recently the system approach has been applied in planning and urban design (see B. Hillier & A. Leaman 1973). However it was suggested that a field or an environment is not an aggregation of elements, but an expression describing a set of relations between things governed by overriding formative laws, (Bertalanffy, 1968). According to this study, this corresponds strongly with the idea that adaptation processes are governed by the hierarchical order of human motivation which functions to establish a form of regularity in the interaction between man and the various elements of the environment.

Buildings as well as cities are therefore systems which incorporate a number of components and their relationships. This could be very useful in explaining many environmental phenomena or architectural patterns only as they appear to the observer in the time of observation. This is the case particularly when the concept of a system excludes time as an integral component and hence no reference is made to the history of that phenomenon and how it evolved.

Systems, therefore, are concerned with the construction of new models of social and cultural phenomena from a standpoint outside of itself, (B. Hillier & A. Leaman 1973). This remark made by Hillier and Leaman enables us to

distinguish between system and structure. Structure is a system of transformation which takes place in time. Such an approach forms the essence of the theory of structuralism whose models attempt to produce the underlying reality that exists within the system studied.

The thesis has arrived at such a finding in the analysis of some examples it introduced, e.g. the balcony. It showed that our perception of the balcony is determined by the different layering of meaning inherent in it and which emerged during the processes of its transformation. A concrete theory of system in architecture must be in space-time, not in three dimensional or synchronic space. Bill Hillier asserts that Structuralism is the science of the artificial in its forging of scientific links between subjects as far apart as theoretical biology and the analysis of myths, art and mathematics (Hillier & Leaman 1973).

### **7. 6. 3. Transformation Processes**

As a result buildings are systems of transformation of physical and underlying socio-cultural realities which can not be comprehended through the three dimensionality of buildings. This applies equally to almost every phenomenon. Myths for examples are structures in which particular forms in nature have been transformed over time into mental structures which resemble the original forms of nature but which acquired a new content. According to Piaget these contents could be forms for previous contents and contents to new forms and so on. The idea of evolution then is linked to transformation of forms and contents which

constitute structures, (Piaget, 1971). It follows that in architecture the various components acquire their contents (i.e meaning) as much as they form part of a structure which includes people's perception and symbolic values. Maintaining the order in architecture would imply that changes which are observed in building designs will only be understood from within a culture as far as they are the result of social transformation (Guidoni, E 1979, p 7-8). This is possible because the symbolic meaning and subjective values which emerge from the transformation processes, according to Structuralism, are becoming part of that structure.

#### **7. 6. 4. Holism**

The example of the Colour Green in Islamic culture may well explain the notions above. The subjective value of the colour becomes part of people's structure of thought about the colour which also includes its physical attributes. The structure of thought similarly includes the various social and religious associations attached to the colour itself as a result of transformation and changes in people's perception and cultural interpretation of the colour.

Architecture then incorporates as part of its essence the semiotic meaning which is expressed in the symbolic features and forms. It is therefore important to question those other thoughts which attempt to view architecture as purely a three dimensional phenomenon. In that it is crucial to understand the history of how these symbolic features evolve and how they locate in the overall structure of the environment. Architectural knowledge cannot be reduced to the perception

of the visual and three dimensional attributes of buildings as is the case in many designs we experience at present.

The thesis has demonstrated in its various sections how the various characteristics of the lower adaptation levels could be seen as forming underlying realities for the transformation of the characteristics of the higher adaptation levels maintaining at the same time strong links to the overall structure of the culture in hand as a holistic entity. In other words our perception of any particular characteristic will be determined by the overall attributes of the whole which is represented in our cognitive structure.

#### **7. 6. 5. Synchronic and Diachronic Perception**

The study has argued that aesthetic qualities are holistic, they embody characteristics related to both the natural and social levels of adaptation. It is important to mention that while each level produces its own characteristics, all will then condition the perception of any phenomenon in hand. It is the right of cultures to emphasize any particular characteristics when these are seen as expressing salient aspects of that culture particularly in forms of their implication for sustainability and survival.

In order to achieve a concrete and thorough understanding of architectural form and aesthetic qualities we should trace the implication of the various evolution and transformation processes which give these aspects their meaning. The

meaning of an object such as a building cannot be reduced to its visual dimensions or to how it appears to us. It is a product of adaptive changes and transformation from one status to another mediated by the social and cultural context.

The use of synchronic and diachronic perception has been very limited in architectural literature. Their use has been mainly applied in other disciplines like linguistics. However, Bill Hillier and Adrian Leaman have introduced them the field of architecture very briefly in their paper entitled "Structure, System, Transformation". Further explanation of these two notions was introduced by Faozi Ujam and Fionn Stevenson in their paper to the Greening of Higher Education Conference, (F Ujam & F Stevenson 1995). Ujam and Stevenson stated that:

*"Another aspect of our assessment of environmental philosophy underpinning architectural design concerns the important distinction between objective scientific and cultural observation in terms of time. Cultural time involves **"Diachronic"** perception which concentrates on the phenomenon as a concept which has a history of evolution and representation in the human mind. An example of this might be the evolution and transformation of the column from a marker stick for herdsmen to the civic columns found commonly in market squares which provide the same sense of place and spatial gathering point. The memory of the marker stick is deeply*

*embedded in and underlies the perception of the civic column  
although the perception and physical entity has been transformed  
over time."*

Synchronic perception involves observing a phenomenon as it appears at the moment of observation rather than how the understanding of it has developed over time. The thesis acknowledges the significance of these two distinctions particularly to the theory of architecture. The author is aware of the need for further study of this subject and would suggest the need to initiate further research to shed a new vision on the nature and essence of architectural forms and aesthetic qualities based on diachronic perception.

It is suggested that architectural education should extend its approach to understanding the phenomena of architecture on a more semantic base than those synchronic views currently applied. The study has made a distinction between synchronic and diachronic understanding of any phenomenon. The few examples which were introduced in the thesis were meant to familiarize the reader of these notions and open up a possibility of a rather different visions.

### **7. 7. Summary:**

Architects have long attempted to influence cultures through the buildings they design by creating symbols for society. Their ability to do so depends on the strengths of attitudes towards existing systems and the architects' ability to

convince others of the symbolic meaning of new architectural forms. People express archetypes in architectural form, among other physical symbols, they also attempt to express their personalities and aspirations through the environments they select for themselves.

Much human behaviour is governed by culture, the system of shared attitudes and symbols that characterizes a group of people. The people's culture is a shared schema that designates regularities in a group's thinking and behaviour. Individuals are socialized within culture, but their behaviour also shapes the culture so that it is not something static, but something that evolves over time. Each culture is unique because it has its own history. This does not mean that certain values are not held by many cultures. Each culture is a result of the past efforts of people to deal with its physical and social environment. People can deal with their own cultures in a collective conscious way. As a result of being socialized into a culture, an individual has the ability to know the appropriate behaviour.



**CHAPTER EIGHT**

**SUPPORT FROM CASE STUDIES**



## CHAPTER EIGHT

# SUPPORT FROM CASE STUDIES

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### 8. 1. Introduction:

In the following section there will be further elaboration on these findings. This will be achieved by the introduction of a few examples and case studies seen from the structuralist point of view that this thesis has adopted. The aim is also to demonstrate how the interaction between the various environmental components stated in the Adaptive Model introduced in chapter three and four will prompt actions that are adaptive in their nature. The Edinburgh case study is a good example in which a decision for some kind of large scale of change was perceived as a necessity to the city. The Tunis case study on the other hand demonstrates the necessity for cultural and dynamic stability and tendency to maintain an intact cultural and urban status when no rapid change was seen as necessary. In both cases these situations can offer support to the ability of a culture to make urban decisions from within driven by internal forces and by cultural and social interpretations.

Another important case study is the introduction of the courtyard house on a way that are not very familiar in the current literature on this house type. It

demonstrates that this house has a variety of associations and cosmological inferences that draw upon the way people experience the house as part of their being rather than as a mere building. Its meaning extends to encompass strong social and symbolic meanings that have some historic and diachronic cultural values. It is worth mentioning here that the thesis aims here to offer an understanding and view of architecture which is holistic. The house, the settlement and people form an inseparable entity tied with a deep and unified structure which is culturally specific and which is beyond a synchronic understanding.

## **8. 2. The Settlement Pattern:**

There are many examples of settlements that were built and developed as a result of peoples' collective effort and self-consciousness. They were built according to their needs and remain sources of inspiration for a great number of architects and designers. The source of such inspiring quality and appreciation derives from the expression of natural and evolutionary forces inherent in the place and its developed cultural interpretations.

*"While there is a hierarchy of importance of people's needs, there is also a hierarchy of elements in the way human settlements are organized and considered to be organized." (Lang. J. 1994, p.363).*

From looking to the pattern and the organization of these settlements all over the

world it could be noticed that every society tried its best to mould its environment into the form most useful to its own specific social and cultural life style and aspiration. Therefore, the evaluation is measured by the relative success or failure in achieving its own specific needs within the limited of skills and the existing cultural knowledge and material resources. While these needs as a whole are dominated by the cultural values, they are also modified by the intrinsic interdependent nature of any society producing different features characterising and identifying their setting. These features and ways of life then vary within the overall structure of the society depending on the status, the norms, customs, people's view of themselves and the world, and their differing needs and expectations. These needs however are not static, they are always modified by culture and the way the same need, (for example esteem), is met will vary from culture to culture and even from individual to individual within a culture (Lang. J. 1994)

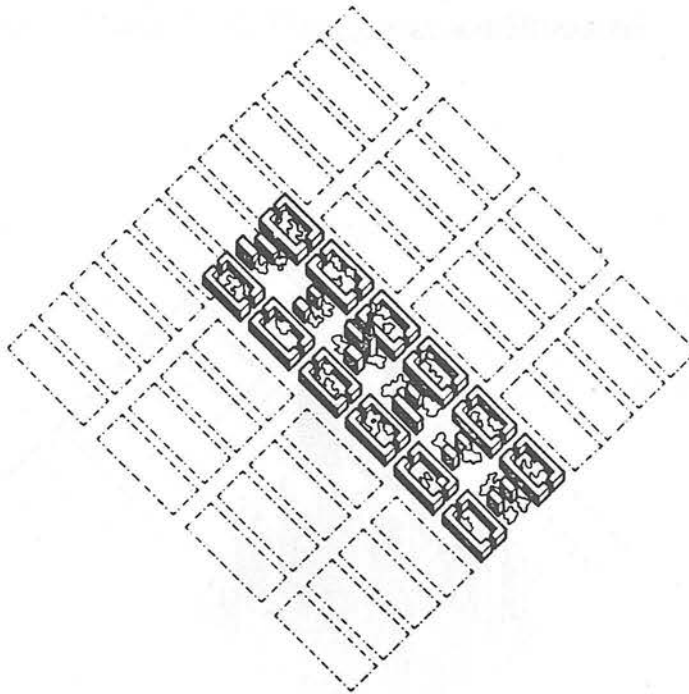
The proposal for organizing the settlement, or adaptations to it does not always occur simply because they are possible. What happens in an area is only one choice among many alternatives which a particular society evaluates and chooses according to its experiences and knowledge. The physical setting provides the possibilities among which choices are made through the taboos, customs, and traditional way of life as well as cultural values and needs. Even when a society is offered a variety of choices, the tendency is to make an option which is severely limited by what Rapoport refers to as a 'cultural matrix' and this limitation may be the most typical aspect of the dwellings and settlements of a

culture (Rapoport, 1969)

Many adaptive changes could occur in cities and their architecture yet the core of the social and cultural value structure may persist, (Lang J. 1994 p.364 & Guidoni E 1979, p.7-8). Lang stated that *"Cities are always changing, but many ways of life and values remain constant."* Guidoni shares similar opinions regarding the nature of communal decisions in relation to changes in the physical structure of cities. He argued that architecture plays an important role as political and social instrument and therefore, for it to be historically comprehensible, it must be considered in relation to the whole range of activities having to do with the comprehension and transformation of space and their interpretation within society. Architecture must also be considered in relation to other kinds of activity: economic, ritual, and so forth. One may consider the contradiction which may exist between physical structure and cultural and interpretative super-structure as a matter which is internal to the society, revealing itself as a contradiction between the real organization of space and construction and the system of interpretation inherent in it (Guidoni, E. 1979).

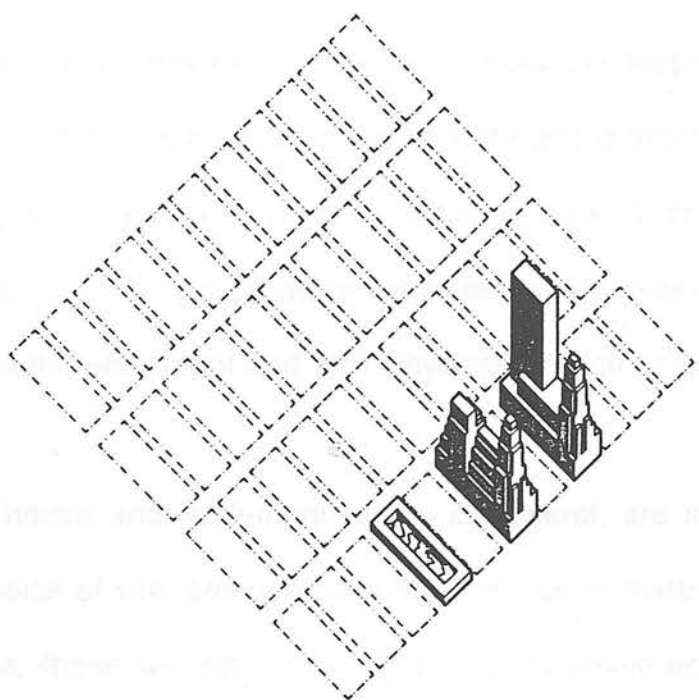
Therefore, city form must be seen within a cultural framework if it is to be understood, because culture contains all other factors which govern people's interaction and life style. Jon Lang (1994) cited that: *"As Plato noted, 'the city is the people. It is a set of behavior settings comprised of people and their activities within a physical frame'".* (Lang. J. 1994, p.36&37)

Even in the case of planned settlements, people tend to reflect their cultural values and lifestyle which would gradually change the overall pattern of the rigid structure of the cities. A very good example may be the American cities which were planned with the grid structure. In their book Urban Space and Structures Martin and March (1972), gave an informed illustration of how the grid plans of some of the big American cities were modified to suit the various needs and social activities of their inhabitants. They argued that in these cities, the artificial grid originally laid down remains the working frame within which vigorous modern cities have developed. It is quite clear then that an artificial frame of some kind does not exclude the possibility of an organic development.

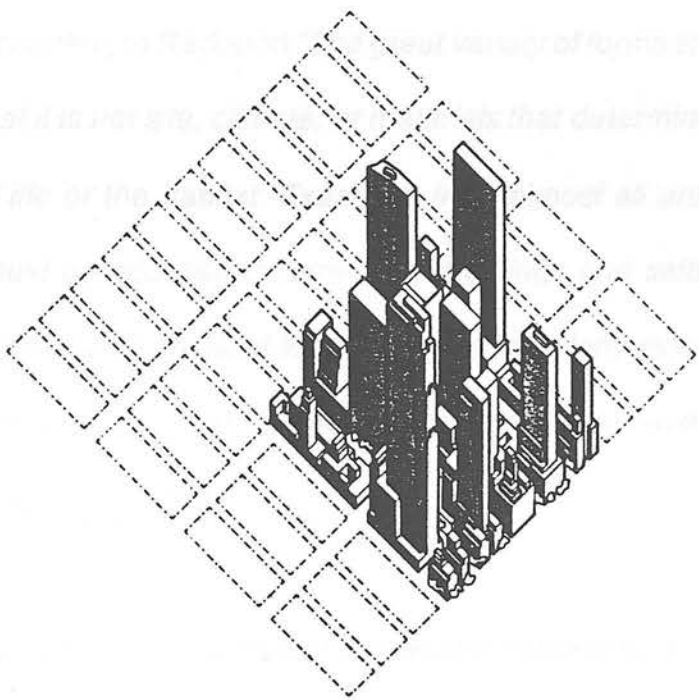


**Figure 8.1:** The basic plot layout of Manhattan is shown in the dotted lines.  
(Source: Martin & March, 1972 Urban Space and Structures)





**Figure 8.2:** The building forms show three stages of development.  
(Source: Martin & March, 1972, Urban Space and Structures)



**Figure 8.3:**The illustration shows building plot development in its most intensive form. (Source: Martin & March , 1972, Urban Space and Structures)



The Artificial grid of streets that was laid down throughout Manhattan in 1811, for example, has not prevented the growth of those overlapping patterns of human activity. Life and living have filled it out but the grid is there, (Martin, L. & March, L. 1972, p.8). This is largely because people who inhabit a city share certain accepted goals and life style which would set the characteristic of the house, the village and the settlement and their physical arrangement and patterns.

Although house and settlement forms, in general, are influenced by climatic forces, choice of site, and availability and choice of materials and construction techniques, these will act as modifying factors governed by people's cultural attitudes and world views. Thus most forms of vernacular buildings are the result of individual desires cooperated within the aim and desires of the unified group for an ideal environment expressing their shared symbolic values.

According to Rapoport *"The great variety of forms strongly suggests that it is not site, climate, or materials that determine either the way of life or the habitat. Examples from almost all areas of the world could be adduced to show that dwellings and settlements are not the result of physical forces [only], particularly since the form often changes in areas where physical aspects have not changed."*

(Rapoport, 1969, p.42)

These views support the thesis's notion that there is no single factor which would be the sole determinant of the dwelling and settlement forms. All physical factors

and cultural interpretation specific to a particular society will collectively influence the process of form generation. Rapoport confirmed this when he suggested that there are numerous forces operating in combination. People fulfil their needs and desires as much as these forces will allow them to do. They have options in the use of tools, technology and materials in order to build and control the environment according to their ideal model which is at the end conditioned by cultural interpretations and social values.

Behavioral patterns are also seen to be strongly interrelated with the visual and physical character of cities. Recently attempts have been made to perceive the city as series of layers: historical fabric, open spaces, ground plane surfaces, building types, planting, circulation systems, and behavior settings. Lang argues that the behavioral and visual framework of the city is created within the circulation of its patterns of public and private open spaces. All these spatial elements and the facades of buildings give a city much of its visual character as well as the activities that take place and the nature of the people involved. (Lang. J. 1994)

One of the most critical issues in the theories of urban structure is that which concerns change. The thesis would argue that changes introduced to the physical structure which is adaptive in its nature as we shall see in the Edinburgh case study, will not necessary entail in dramatic social and cultural 'genetic mutation'. In many occasions particular conditions such as the aggravation of unhealthy and undesirable conditions may lead to the decision for change in the physical or

visual framework of cities. Guidioni argued that

*"With regard to the constructed object, its use, and its significance in relation to all the societies in contact with it, every culture - every class - furnishes its own interpretation, attitude, associations, and explanations of why it is what it is. Such interpretations are not merely a posteriori. They reflect a complex of attitudes toward architecture, which as values only partially put into use, each culture develops for its own particular social and economic needs. These attitudes permit the rapid assimilation and transformation of architectural types and materials without necessarily implying a total mutation in the social context. On the contrary, the social context often reinforces itself in its traditional structures precisely by means of a "new" architecture."* (Guidoni, E. 1979, p.7&8)

Guidioni's strong notion of the relationship between physical change and social and cultural structure is very important. One would argue accordingly that change is an evolutionary and accepted phenomenon because societies are equipped with capability to make decisions and choices for change to maintain dynamic and ordered status for their cities. Yet these changes may well be more acceptable when pertaining to the needs and expectations of the culture in hand. The visual and aesthetic qualities will be assimilated and become land marks when they confirm the principles (climatic, social, behavioral, economical and so on) that underlie the various interrelated aspects of the society. On the other

hand the state of stability would not mean the state of unchangeable but rather a uniform pattern of slow and orderly change as we shall see in the case study of Tunis. There, people perceived no urgent necessity for rapid change in the physical structure of the city due to stability in the pattern of relationship between the various components of that particular place. This can only indicate that different cities have different contexts of social and cultural conditions which will result in different pace of change.

### **8. 2. 1. The City of Edinburgh:**

Edinburgh represents an ideal example where cultural interpretations have been evident in almost every aspect of this great city. The aim of this case study is to assert the role of peoples' awareness of the various potentials of their city whether physical or cultural in the evolution of the city as it stands now. On the one hand one is struck by the unified character of the historical city. This is represented by its architecture, social context as well as its culture. On the other hand one is aware of the fact that the city consists of so many different areas yet contribute to the holistic identity of the city. The message this thesis intends to convey is that Edinburgh has inherited a cultural interpretation so strong and evident that should be considered in the historical interpretation of the city and its urban development.

The dramatic topography on which the city was built has provoked a strong appreciation and led to intensified sense of culture that persisted in almost every event including the social structure, economy, intellectual activities and scientific progress. We will see how different phases of development, though mistakenly perceived as being different, have been absorbed by the overall character of the city asserting a unified cultural expression. We will also realise how the social life which Edinburgh nurtured was and still is very consistent, rich and strongly integrated with its physical structure. Where many other cities suffered fragmentation and alienation due to the imposition of changes, it would seem that every change and development that occurred in Edinburgh expresses strong link

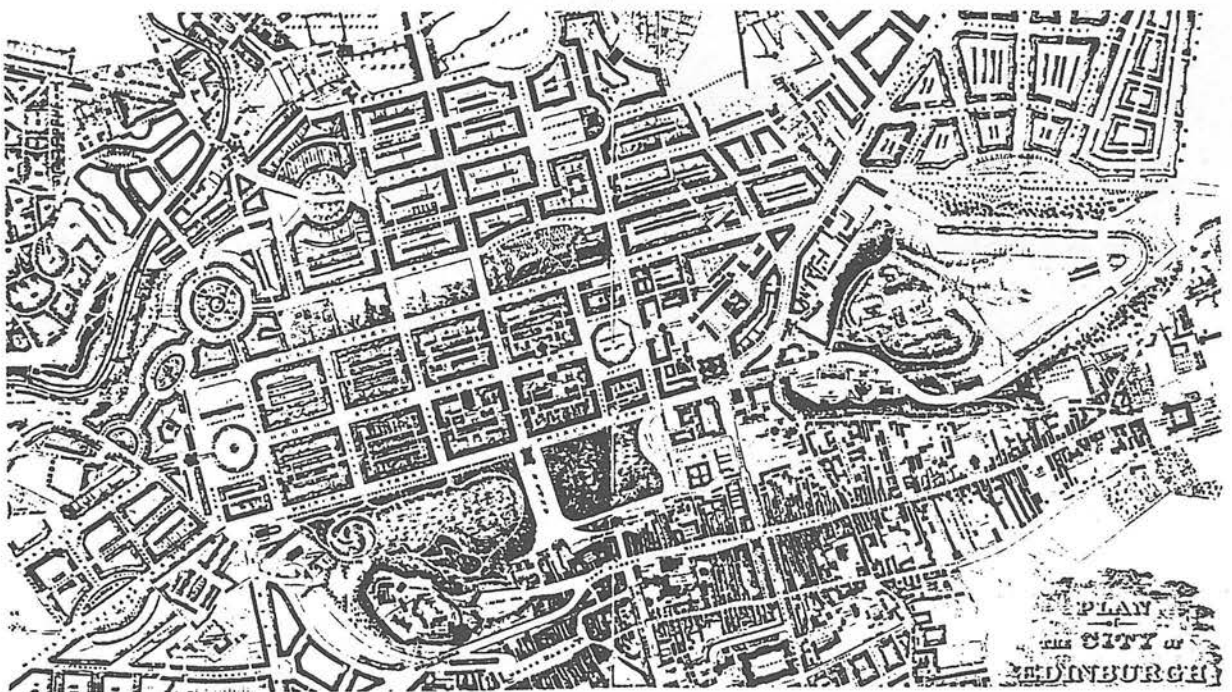
to the cultural appreciation of the city, its site, topography, and the many potentials it had and still has nowadays.



**Figure 8.4:** Map of Edinburgh in the 18th century, before the expansion of the city.  
(Source: Youngson, A. J., 1966, The Making of Classical Edinburgh)



One of the difficulties associated with the various interpretations of the history of the city is the lack of an ability to see these events as they occurred in the time they happened. Many modifications and alterations were introduced, whether in the old or the new town only to reconfirm peoples' fundamental affinity to the city which then stamped its unique cultural identity. The invasion of the new town with land uses and activities which were not intended by the initial design of James Craig is a very good example of the dominance of the culture of the place. The initial design of Craig's plan was a suburb for calm with George Street as its centre. This has been changed over a period of decades through the natural process of adaptation to become an area of mixed land use and more emphasis on commercial activities. At the same time the centre of this plan shifted from George Street to Princes Street which with the High Street of the Old Town came to form a new and bigger centre for the whole city.



**Figure 8.5:** Plan of central Edinburgh, about 1827, showing various phases of New Town.  
(Source: Youngson, 1966, *The Making of Classical Edinburgh*)



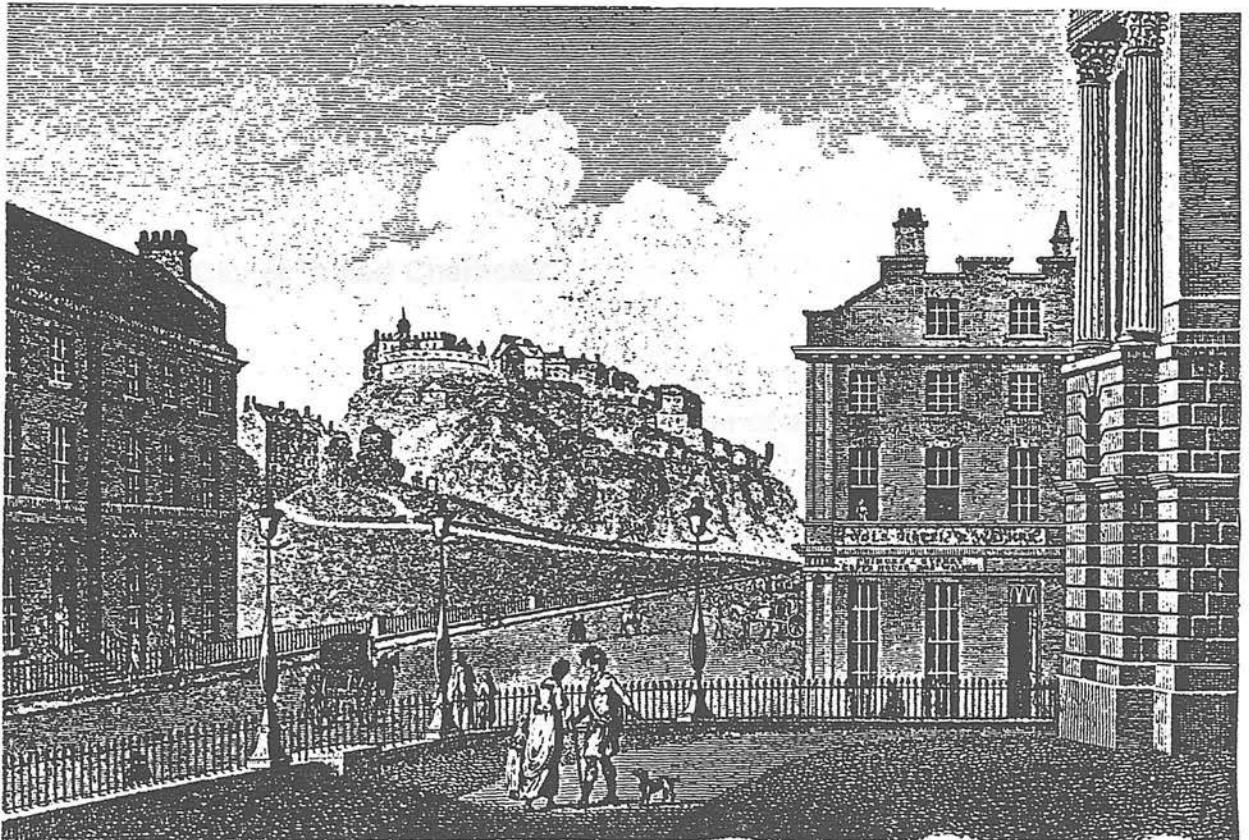
The following is a brief analysis of the interaction between the various components earlier stated in the adaptive model. These components characterise the surroundings of Edinburgh such as its natural setting, resources, the typology of its built form, social context, and culture. The aim is to demonstrate how these aspects can be seen as an expression of its inhabitants' ability to adapt and to actualise their various motivations of their social and intellectual needs. The other objective of this case study is to challenge those views which have been so dominant and which offered partial explanations of the historical events by alluding to the development of the new town as a result of sole factors such as bad health and over crowded conditions. The study will argue for a variety of many other factors which could collectively indicate people's profound awareness of the resources and potential their city offered.

#### **8. 2. 1. 1. History and Geography:**

Edinburgh has benefited tremendously from its natural site which has made her one of the most beautiful cities in the UK if not in Europe. The shape of the city and its style were characterised by the adaptation to the physical and visual strength of its site, a topography so individual that it has never ceased to dominate changing forms and materials. In the Old Town the high street is the major feature and route in the city's structure running from west to east situated between two important nodes and landmarks where from the west the castle, standing on a high spur of rock, overlooking the surrounding countryside. On the east, the former Abbey and the more recent Royal Palace lies in the valley

between Edinburgh's other two hills- Arthur's Seat and Calton Hill. (Youngson, A. J., 1966), (Bell, D.J.,1994).

On the other hand the adaptive aspect of the city is the location of the Castle rock, obviously the most defensible place within the city. The only nearby site for development was the long ridge descending vulnerably to the east. Down it, from the Castle to Holyrood, runs the long street known from the sixteenth century on as the Royal Mile. By the seventeenth and early eighteenth century the historical image of the city was formed as the densely built-up spur of the rock, with the castle at its head and the palace at its foot. Major expansion did not take place until the mid eighteenth century, piecemeal to the south but regular on the level ridge of the Town's land to the North, made accessible by draining and bridging the North Loch. (Gifford, J. et. al. ,1991)



**Figure 8.6:**An early view from the East end of Princes street.  
(Source: McLaren, M. 1950 *The Capital of Scotland*)

The nature of the city's site was characterised by steepness which was virtually unchangeable. Although it seems to imply a negative effect on the structure of the city, the community used it to great advantage. This specific site allowed views and light into many more houses than would have been possible on a flat site; and the only access to the houses, were both steep and narrow that gave all inhabitants some protection from armed attack, and some possibility of defending their own property.

*"Edinburgh's inhabitants had every reason to fear attack; they had long experience of invading armies, street skirmishes where frequent and mob violence a reality. At each occurrence property was destroyed and inhabitants were injured and killed. In 1746, defence of lives and property was still a necessity, not a romantic archaism, and the network of narrow closes was still playing a major part in the citizens' protection."* (Bell, D.J., 1994, p.29).

#### **8. 2. 1. 2. City of United Character:**

*"Edinburgh has the most spectacular landscape of any in Britain."* (Gifford, J. et al. ,1991, p.21). Its layout is well integrated with its surrounding nature from the morphology point of views, this can be seen from the match of its structure with the topography of its site. The city is a mixture of urban and rural areas within its urban structure, from its centre in just few minutes walk *"At the East End of the city there stand or rather crouches the huge bulk of Arthur's Seat- surely one of*

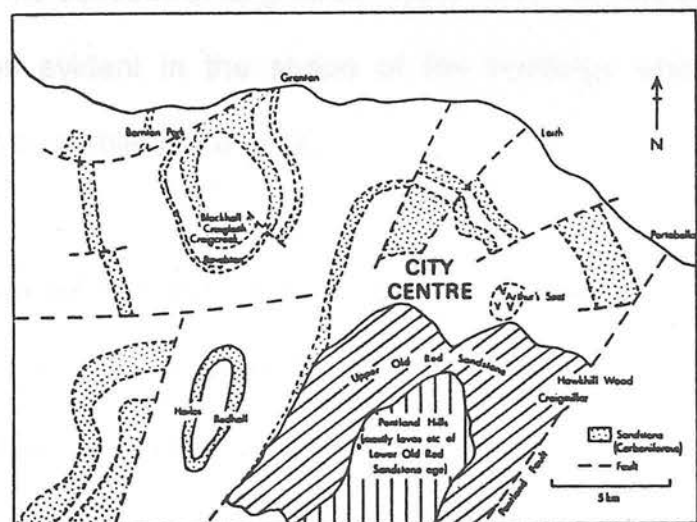
*the few great hills in the world actually to be enclosed within a city's boundaries."*  
(McLaren. M. 1950, p.11).

It is evident that the appreciation and the exploitation of Edinburgh's natural resources and its extraordinary site have inspired a strong sense of unity and regard to the city during its various phases of historical development. These natural resources and the visual quality of its site had attracted many people including King David 1 who Founded the Royal Burgh of Edinburgh in 1130 and offered the town political support it needed. This support which gave rise to the economy reflected in the development and growth of the city as capital of Scotland.

The other local resources which the city uses to its benefit and gave it unified character are its natural building materials available near by. Sandstones for example are dominant as a building materials and are more obvious in the city's buildings, at all phases of

its developments. Gifford, J. (1991), in his book Edinburgh The Building of Scotland, stated that Edinburgh's sandstones provided the main source of building material till well

into the twentieth century.



**Figure 8.7:**The main sandstone beds of Edinburgh.  
(Source: Gifford, J. 1991 The Building of Scotland Edin.)

The process of the weather and its effect on the colour of the different kind of sandstones makes the city have the same harmonic appearance of the facades of its buildings. *"Uniformity of weathering brings a pleasing unity of appearance, silver-grey overall, to building (especially terraces) built of different stones, and to the city as a whole."* (Gifford, J. et al. ,1991, p.23). The geographical distribution of the main sandstone beds and quarries in or near Edinburgh is shown in Fig 8.7.

Edinburgh's houses and their decorations are formed after a pattern of one style which gives identity to the city as a whole. Most of its larger units, its streets, squares, places, crescents and circuses, are imagined as parts of a unified design. Yet every unit on its own is complete, and containing within itself the harmony of unexpectedly romantic quality of a unified character of the city. This quality springs from a combination of natural effects and from the organisation of its structure, sometimes demanded by necessity, sometimes casual, and natural adaptation processes through the decades of its growth. This is clear from the set of shared consistent features evident in the shape of the buildings which resemble previous built forms available in the area.

*"Each Age in this town of contrasts and contradictions, each century, each year is linked inextricably and in design with the last, making that unit that we know as Edinburgh to-day."* (McLaren, M. 1950, p.13)





**Figure 8.8:** Ainslie Place, Edinburgh.

(Source: Youngson, A.J. 1966 The Making of Classical Edinburgh)

The need for housing the large number of people in small area led to the development of the tenement building which later on became the character of Scots cities in general. *"There was a limit to the number of houses which could be built side by side, quite apart from the desirability of keeping some garden ground. The alternative, taken up in c16 Edinburgh, was to build houses on top*

*of each other, i.e. to build tenements."* (Gifford, J. et al. ,1991, p.59).

### **8. 2. 1. 3. The New Town: a rejection of single reason for change**

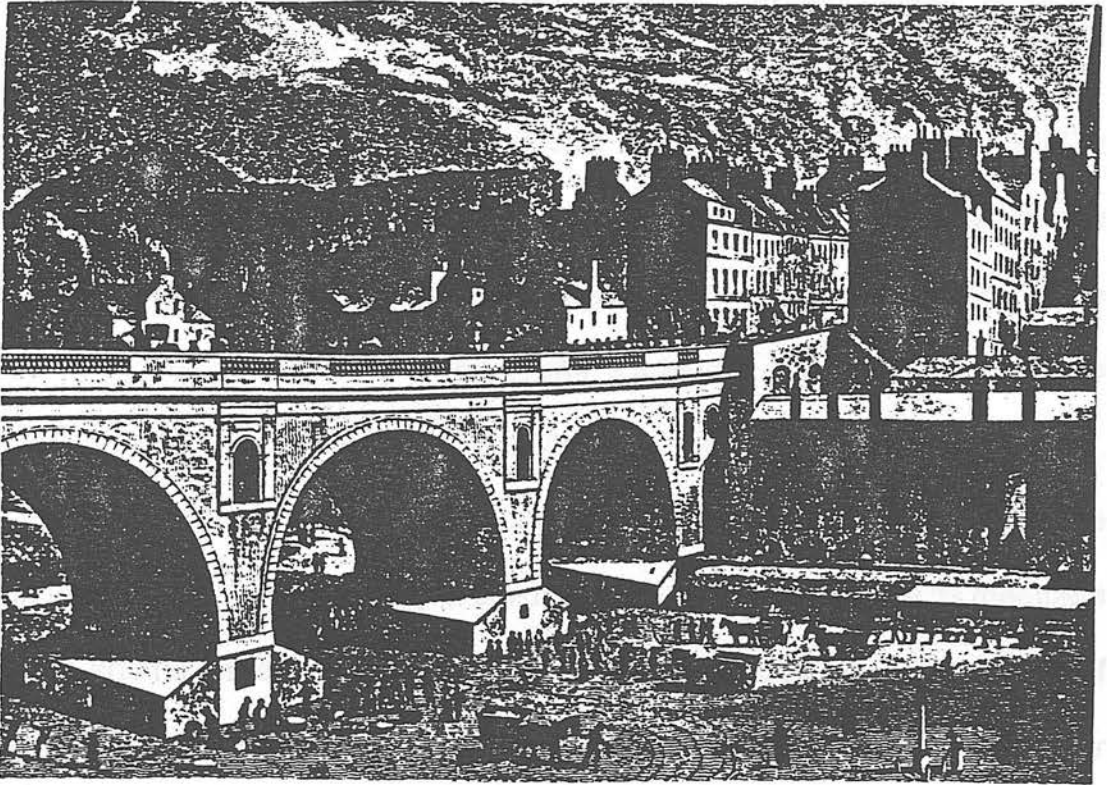
The idea of building the New Town due to the bad conditions of the Old Town was rejected by many writers. Bell confirmed in her PhD thesis (the New Town): *"In this respect its inhabitants had not, as they intended, escaped from the "deficiencies" of the old city, nor had they escaped the other better known "disadvantages".* Bell, D.J.,1994, p.172&173).

Therefore, the development of the New Town is seen as *"In the argument of the writer of the Proposals, the main benefit of "beauty and convince", ..... came from its ability to attract the "principal families" away from London to Edinburgh. This, it was suggested, would increase the population."* (Bell, D.J.,1994, p.155&156). At the same time this act gives support to the Old Town as well.

Other important factors which encouraged and made this process possible were the earlier draining and bridging of North Loch. These led to the development of the area in the North of the city by building Edinburgh's First New Town project. At the beginning the aim of the New Town was to separate from the existing Old Town a zone of order, luxury and distinct status for the permanent use of the upper class. At the early stage of the New Town the intention was for calm and purity so, there were no businesses, shops or markets. Markus mentioned that:



*"The New Town was a suburb in which the political and professional rulers of Edinburgh, and indeed Scotland, could establish a self-conscious image removed from the density, social mix and increasing squalor of the Old Town."* (Markus, T. A. 1982, p.8).



**Figure 8.9:** The North Bridge from the North West.  
(Source: Youngson, A. J. 1966 The Making of Classical Edinburgh)

There were a number of other motivations beside improving the sanitary and the health conditions of the Old Town. A need was strongly felt as well for the idea of extending the city to include lands on the other side of the North Loch to improve communications northward with Leith which was the port of Edinburgh (Youngson, A. J., 1966). All of these with the bridging and draining of the North Loch led to the building of a New Town, characterised by an inward looking

nature, spaciousness, low density, and separated by a wide strip of open land which was lacking in the Old town. According to Markus (1982), this act of new planning arrangements led to the widening of spaces between buildings in order to provide access to fresh air which was considered fundamental for health. This belief, however, has survived well into our present times in the form of building and planning regulations designed to achieve optimal layout and to limit maximum densities (Markus, T. A. 1982).

Trade is one of the important potentials that the city dwellers were aware of. It could be considered as an important factor for Edinburgh's prosperity which had obvious role on its structure and morphology. It could be argued that one of the most remarkable manifestation of Edinburgh's adaptive characteristic is that the Old Town was concentrated along the line of a wide elongated market place, edged by shops and houses, on very narrow strip lots of lands. Therefore, the community had inserted a variety of buildings used to accommodate its members for living and for a market place. These strip spaces divided into a succession of linked areas, each with its own distinctive character set mainly by association (or lack of it) with the royal and civic buildings and by the prevailing topography. It is obvious from the structure of the Old Town that the land on both sides of the high street had been divided into long narrow strips, allowing a maximum number of properties to have frontages onto the market street, each with maximum holding of cultivatable land behind, (Bell, D.J., 1994).

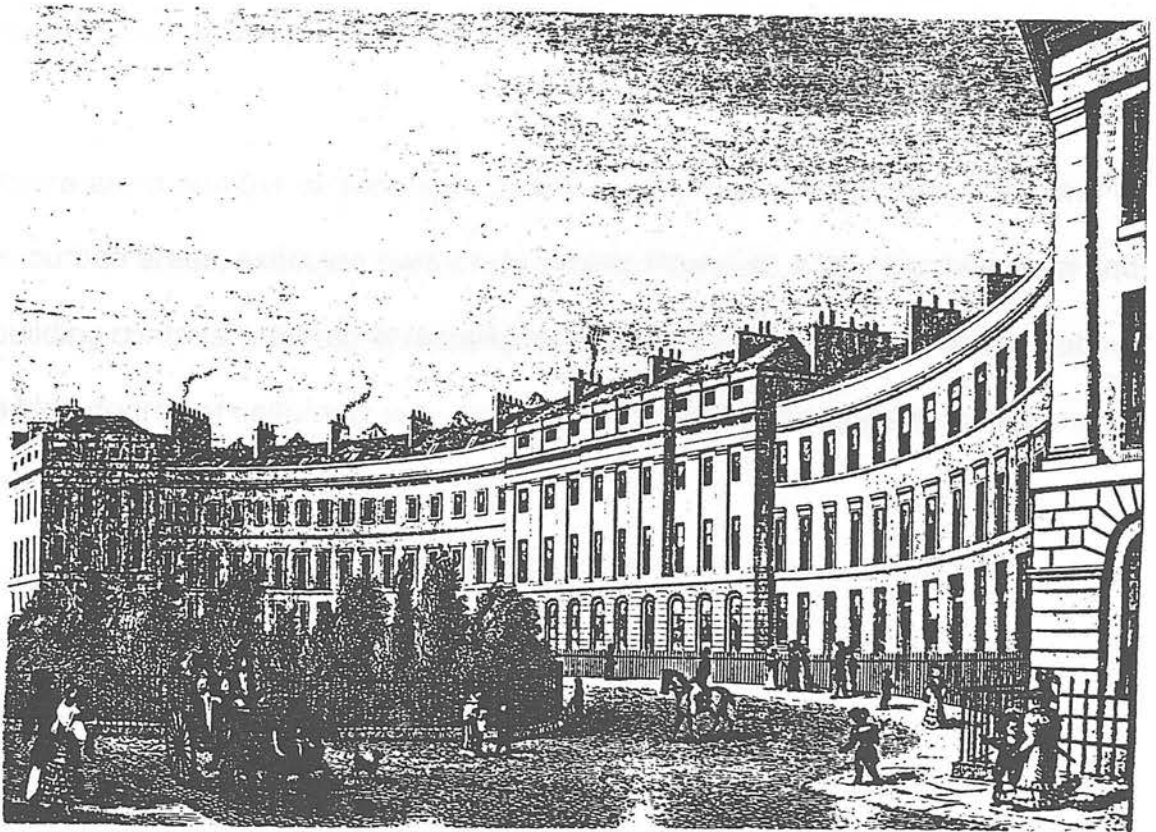
The growth of the economy and increase of the wealth and richness of its citizens

led to introduce a new element to the structure of the city, that is the Suburb. Some of the rich people prefer to be far from the busy city centre especially for living. So they are looking for quite peaceful suburbs, places in Morningside, Newington and Marrayfield and so on. These suburbs, although separated from the city centre grew as part of it and became one of its character. There is no difference between the character of these suburbs and the whole city as is confirmed by Bell (1994):

*"There was virtually no difference in new property in the old city and new property in the suburbs. .... What distinguished the northern suburb (and George Square) from the city proper, was not the type of the property but the gridded layout, the rigid separation of classes of buildings (ie, houses, stabling, workshops, etc), and the consistency of style."* (Bell, D.J.,1994, p.175)

The aim of building the New Town was to have a place of calm and purity of a suburb for the city on the hill. However, this suburb developed a life and importance on its own, linked and gave prosperity to the existing Old Town producing the over all character of the whole city of Edinburgh. Nevertheless, building the New Town, was a physical necessity as an answer to the overcrowded, malodorous and unhealthy Old Town. But the benefits bestowed by a 'visionary' New Town were not only physical, they were intellectual and spiritual also. Moray McLaren (1950), described the New Town In his book The Capital of Scotland, as:

*"Despite its purely practical beginning and its vague and formless ending, the New Town of Edinburgh remains to-day one of the most satisfying visible achievements of man's mind and imagination in western Europe. It has, of course, other qualities. It is in its own style most beautiful, and has great nobility; but it is primarily as satisfying that one thinks of it. It is satisfyingly beautiful and satisfyingly noble. Large parts of it with their grey stone and severe outlines may be cast in the minor key of architecture, but they are not sad; they move one's aesthetic sense deeply, but they as deeply satisfy it. They fill one's capacity for appreciation completely, so that there is little room left, when one is enjoying them, for 'immortal longings.' "* (McLaren, M. 1950, p.61)



**Figure 8.10:** Ainslie place one of the most perfect of the units of The New Town.  
(Source: McLaren, M. 1950 The Capital of Scotland)

#### 8. 2. 1. 4. Variety of Developments

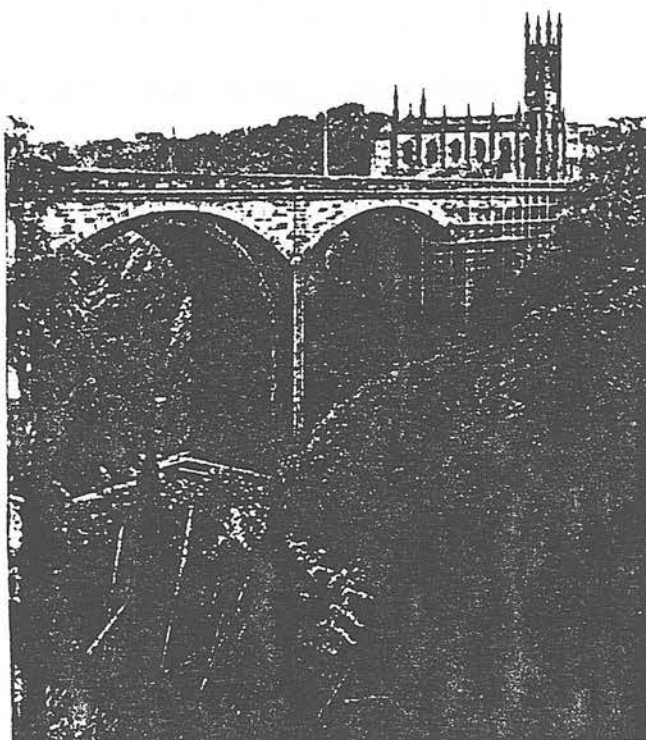
The city has been under a continuous process of change which manifests itself on many adaptive levels, physical, social, economic and cultural issues. During this process, adjustment and adaptations have been made to suit the new needs and requirements without undermining the city dweller cultural interpretations (see Guidoni, E. 1979). On the physical level, the city layout and the dwelling unit have been altered and modified. New buildings have been introduced in line with the socio-economic changes. New arrangements of spaces have been made (in the New Town or new suburban areas) with the introduction of new facilities. New forms have been developed with the increased contact with Europe and other countries in the world. **Despite these changes and modifications, both the old and New Town have retained and reserved their unified identity and their character.**

There are a number of separate private developments in the New Town and in suburban areas, executed over a long period. However, a set of architectural and building controls, adhered to remarkably well in the circumstances, brought about a high degree of uniformity and, as can be seen today, a satisfying homogeneity.

One of the attractions of Edinburgh is that the city continues to nurture a number of peaceful village communities in which there survives a rural atmosphere only a few minutes of its centre. It is also a city of fine gardens and open spaces including the tranquillity of the Dean village with its water of Leith as well as many parks and natural landscape in the Meadows, west Princes Street Gardens,



between the Old and New Town, Holyrood Park, and Soughton Park and alike. Until now the Dean estate still sustains quite village with a green rural area, very much in contrast to the dramatic high-level entry over the Dean Bridge which adds an aesthetic element to the city's structure. (Gifford, J. et al. ,1991,p.384)



**Figure 8.11:**The Dean Bridge.(Source: Youngson, A. j. 1966 The Making of Classical Edinburgh)

#### **8. 2. 1. 5. Social and Cultural Interaction:**

In Edinburgh's Old Town there was a shared sense of belonging and interest amongst the different social (Guild) groups of merchants, craftsmen and Royal authority men as well as others which led to have shared common interest values effecting the city and its development. There are many aspects of social behaviour and life style related to this phenomenon which surely affect the development of the city.

*"As the population grew in size and richness, many were extended*

*down the open strip of ground, and to gain entrance to the building to the rear (backlands), private entrance paths (closes) from the street were needed, one to each tenement and each only as long as necessary to reach the land lying furthest back from the frontage. (Bell, D.J.,1994, p.28).*

Earlier Edinburgh was structured on the medieval Guild system, which concerns only with the interest of its members, (member of any Guild required to be a burgess and to be a burgess one had to own land within the town. Then the Guild will give you the right to work, to elect and vote for the councillors). Therefore, the properties were then handed down through families. keeping hold of a property could decide your social and financial fate, (McKechnie, M. E., 1996).

*"As had been established in the earliest burgh legislation, only merchants, trades, and craftsmen who had been granted burgh land (known as toft or tenement) and had built on it within a year of coming into possession could become burgesses, and only burgesses had the right to trade within their town." (Bell, D.J.,1994, p.28).*

In general the inhabitants of Edinburgh see their city as the 'Athens of the North' and in this respect they try whatever means to have their city as close to the ideal image from a cultural and aesthetic point of view as possible to stand the



competition of cities like London and others. So, to achieve this goal required a great deal of courage and vision on the part of the Town Council to undertake building a New Town to the North with open plan, at the same time they made a lot of improvement and changes to the conditions of the old town.

*"One way of achieving it was to establish a fresh and separate settlement on a hill, strongly contrasting with the dense disorder of the Old Town. Another was to purify the existing society by removing from it those elements which most tended to chaos and which, through the systems of law, reason and philanthropy, most required help or correction."* (Markus, T. A. 1982, p.28).

#### **8. 2. 1. 6. Conclusion:**

The city in general rates high in securing all of its inhabitants' needs, from the basic physical ones to the more higher social and cultural ones. It sets a good example of control, diversity, and equity of access to people, activity, places, and information. The city's unique qualities and character relate to the clarity of the urban structure and orientation in space and time. The match of the physical structure to the economic, political, social and cultural values, the transparency, legibility and the symbolic significance, all give the city a positive image and definite sense of place. In 1988 the Europa Nostra silver medal was awarded to the City of Edinburgh for 'outstanding example of co-ordinated rehabilitation and maintenance management in an area of high architectural values. And recent

studies on the quality of life in UK cities (Glasgow Quality of Life Group) ranked Edinburgh top. (Rogerson, R. 1996)

Regarding the components of the adaptive model suggested in chapter three and four, the city had responded to and was influenced by these components. It shows that there is a kind of mutual relationship between built form and space through the adaptation processes. This is manifested in the following ways:

*[Nature]:* The city is influenced by and well integrated with its surrounding. Therefore the surrounding environments have a vital role in shaping the city morphology through the mutual adaptation processes between the structure of the city and its difficult site. The city fits perfectly to this site turning its disadvantage to more advantage until it became known as a particular identity for the city. It is very odd to imagine Edinburgh on another site but this.

*[Resources]:* there are a variety of resources available in the city like material, economic, political and intellectual resources etc. The city uses all its efforts to gain benefits from all of these resources. For the material resources Edinburgh uses the available sandstone nearby for its buildings which gives unity to its style. On economic terms, Edinburgh has a good reputation in trade so that the trade affected even the shape of the city, specially the Old Town. Political resources for Edinburgh as the capital of Scotland gave it more support for growth and development as a symbol

of the Scottish identity and prosperity. Education in Edinburgh is considered a vital resource for the city. Many thinkers and scientists have worked in the city, their intellectual achievements and their scientific discovery is the pride of the city and its community.

*[Built Form]:* The style of the city's buildings confirm that there is a harmony between different stages of the development in the city and each stage was effected by the previous built form in the area. This harmony helped the city to have a unified character of its architecture.

*[Social behaviour (interaction)]:* Throughout the development of the city people have a sense of belonging and shared interests binding them together led them to developed a good relationship. This sense of belonging and system of shared values creates a unified community's vision on most issues affecting its future developments.

*[Culture]:* Regarding cultural and aesthetic issues the city responded to people's cultural values and their aesthetic needs by supporting the intellectual activities. Edinburgh's inhabitants are very proud of their city and they consider it as the 'Athens of the North'. So the city is built according to this vision to be as close as possible to an ideal 'Athens' image. The city has a strong image from a cultural and aesthetic point of view which helps her to stand the competition of other rival cities.

Throughout the development of the city there were successful adaptation processes in the structure and the morphology of the city at all stages. The city fits well to its site and it is well integrated and lives in harmony with its surrounding nature. It responds to its inhabitant needs from the physical, social to the cultural and aesthetic issues by providing and facilitating all these needs at all periods.

### **8. 2. 2. The City of Tunis:**

As it was stated earlier in this chapter, the City of Tunis was chosen as a case of a city whose consistent and strong architectural character is the cultural expression and interpretation by its people, of its contextual and historical potentials. The city of Tunis is very well known for its Islamic and Arabic identity which the city has successfully maintained over centuries of its development. This study will outline briefly some aspects that have lead to the stability and persistence of the architecture of this city. While the building of the New Town in Edinburgh was seen by this study as an adaptive change which maintained a strong cultural continuity with the Old Town, the apparent and slow pattern of change of Tunis can also be seen as an adaptive process which is the expression of the cultural context. The study argues that the slow and organic evolution of the city was the result of some kind of compatibility between population and the various physical and subjective resources that the city offered. As a result of this slow pattern of change more attention was focused on crystallising and strengthening the city's architectural character. This was clearly achieved in the city's morphology, its spatial systems, the indigenous architectural features and also the social context and activity patterns that collectively characterise the city in general.

The following section will introduce an analysis of the city structure, its history of development and also a brief description of its architectural identity.

8. 2. 2. 1. History and Geography:

Tunis was founded in the seventh century by Hassan b. al-Numan, as an Arabic Medina, only fifteen kilometres from the ancient city of Carthage. The first and most important act by Al-Numam was the decision to locate his city inland which is less vulnerable to maritime attack, (Hakim, B. S., 1986). The layout of Tunis city is made according to the traditional Arabic

pattern, which is in

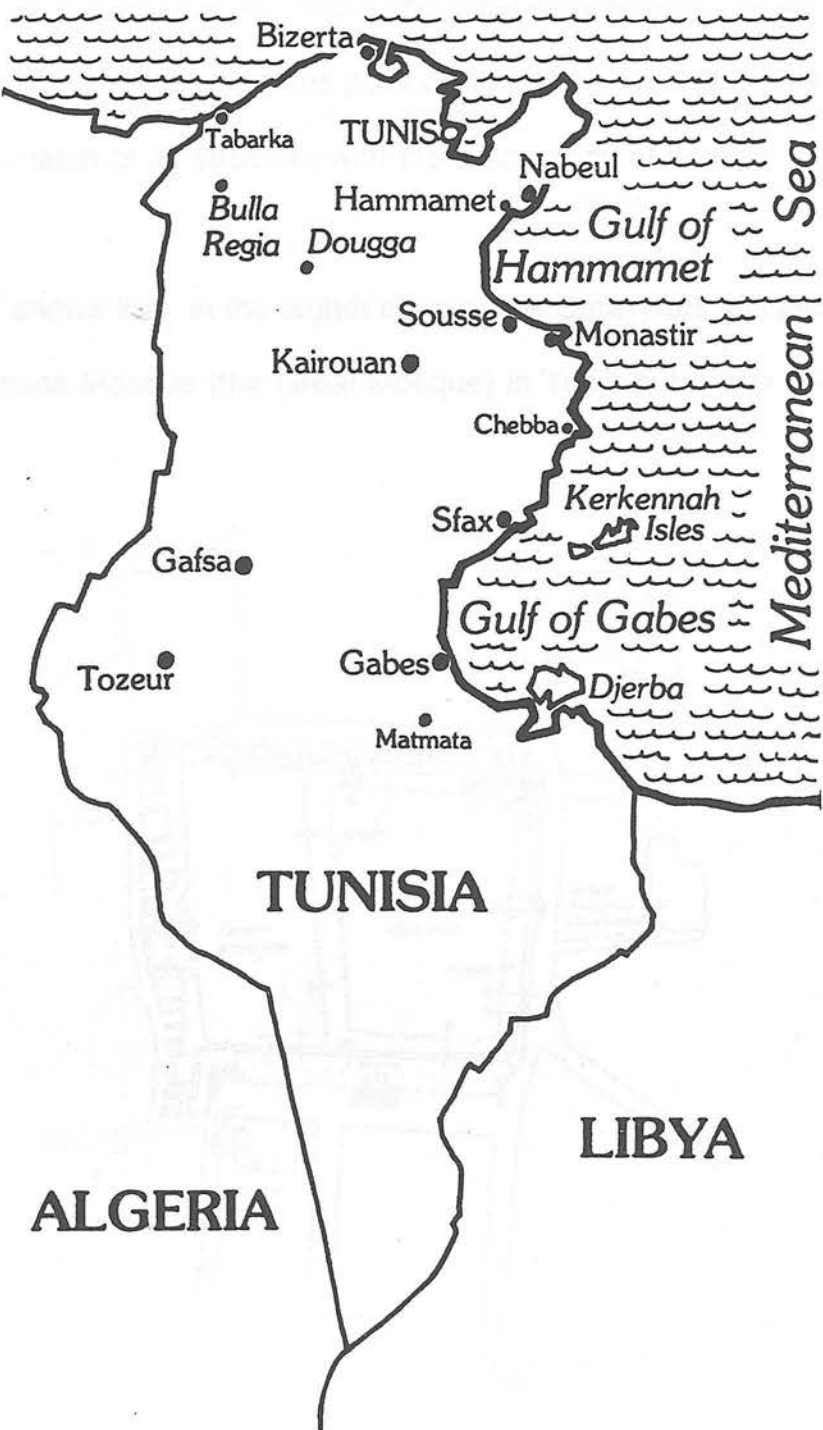


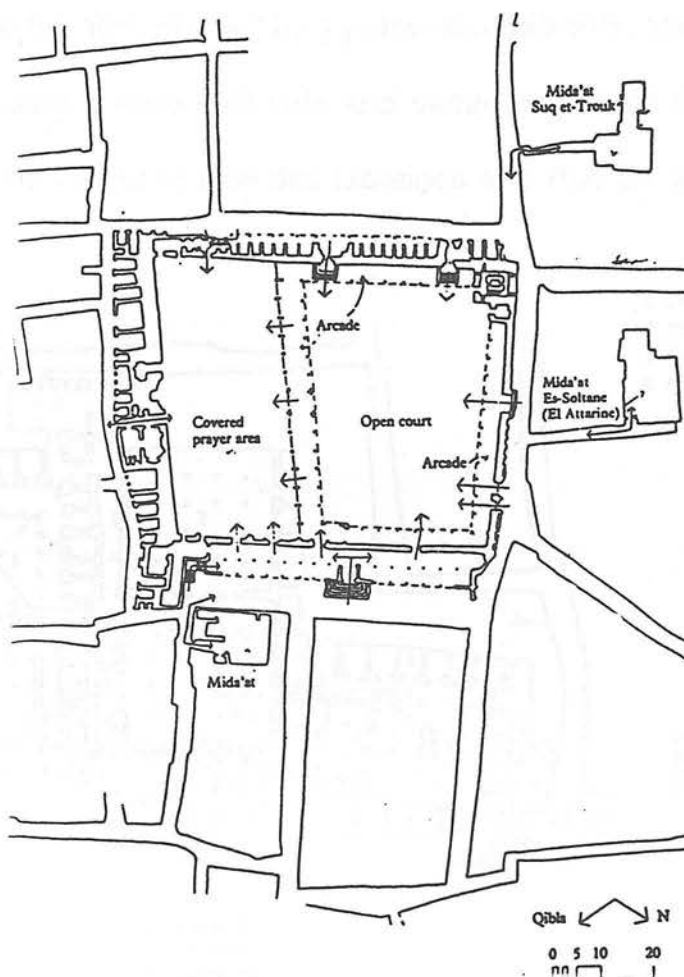
Figure 8.12: Map of Tunisia.  
(Source: Butler, R. 1990, Where to go in Tunisia).

total contrast to a grid-pattern and it is well integrated with its surrounding natural

landscape. The city is sited on a low hill range between a shallow coastal lagoon, now called the Lac de Tunis, and a seasonal salt lake named the Sebkheth es Sedjourni, (Findlay, A. M. & Paddison, R., 1986) This location made the city well combined with its surrounding nature from the point of view of morphology, which is noticeable from the match of its structure with the topography of its site.

The history of the city shows that, in the eighth century the Omayyads initiated the building of the Zitouna Mosque (the Great Mosque) in Tunis but it was the Aghlabids in the ninth

century who completed the structure, which at that time was a third of the size of the Great Mosque in Kairoun, their capital. In the thirteenth century the Hafsids based themselves in Tunis, who made the expanding city their capital. The city was better placed to exploit trade

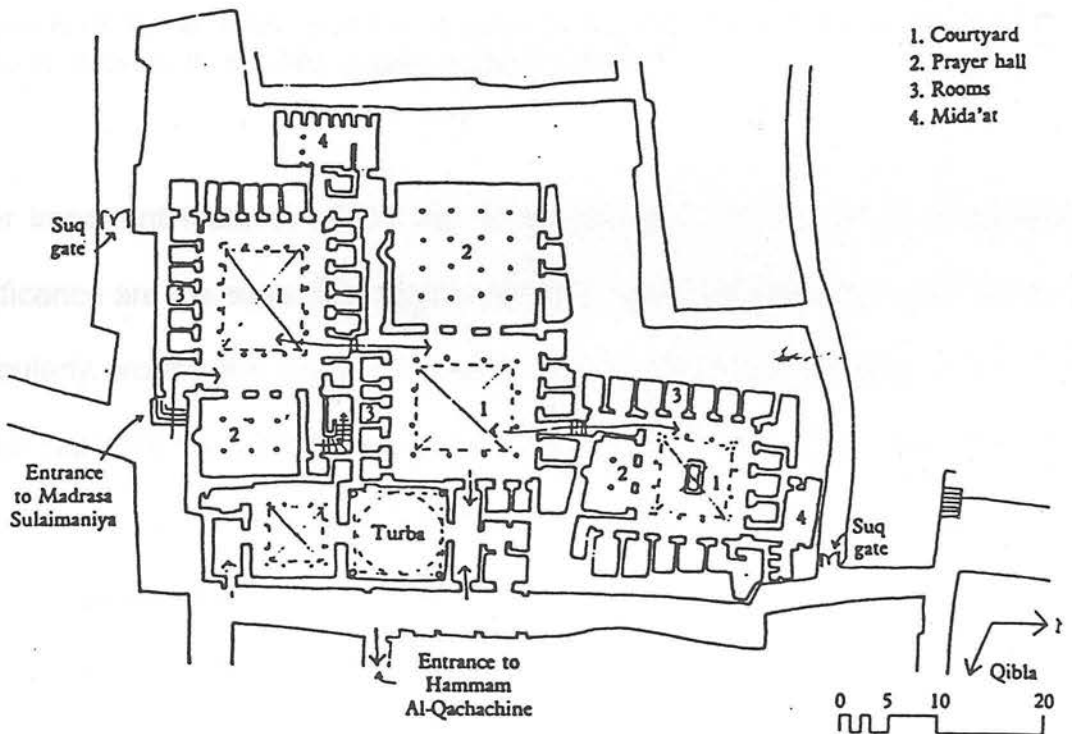


**Figure 8.13:** Plan of Zitouna Mosque in Tunis.  
(Source: Hakim B.S. 1986, *Arabic-Islamic Cities*)



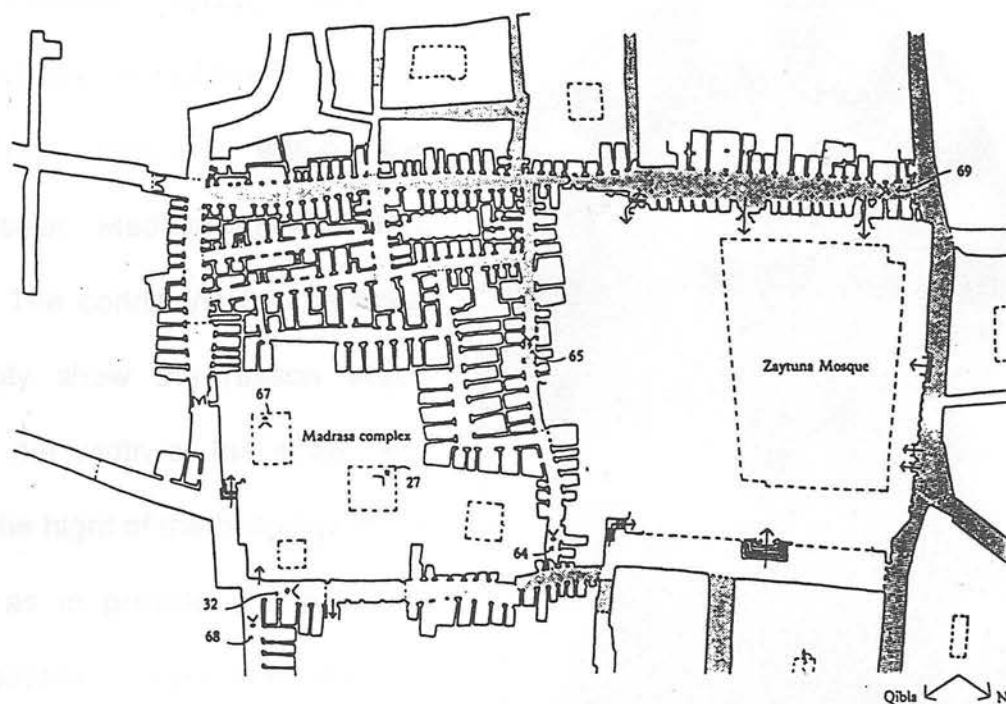
opportunities with Europe, (Stannard, D. 1994). Later on Tunis became the administrative centre of the Beylical-dynasty of Tunisia, part of the Ottoman empire, which gave the city a political significant and an important role in the economy of the entire country, (Findlay, A. M. & Paddison, R. ,1986).

On the other hand the Zitouna Mosque gave the city its cultural and religious importance as a centre of theological and sociological studies making the city significant for intellectual and teaching activities. Near the mosque there are several *medersa* (schools) for the theological students. The Palm Tree Medersa (1714) is immediately on the right, marked by a yellow studded door; the Bachiya Medersa (1752) is opposite a makeshift cafe and *hammam* and es Slimaniya Medersa (1754) is on the corner of Rue des Librairies and Rue de la Medrsa



**Figure 8.14:** Plan of a three Madrasa complex and Turba, south of Zitouna mosque.  
(Source: Hakim, B.S. 1986, Arabic-Islamic Cities)

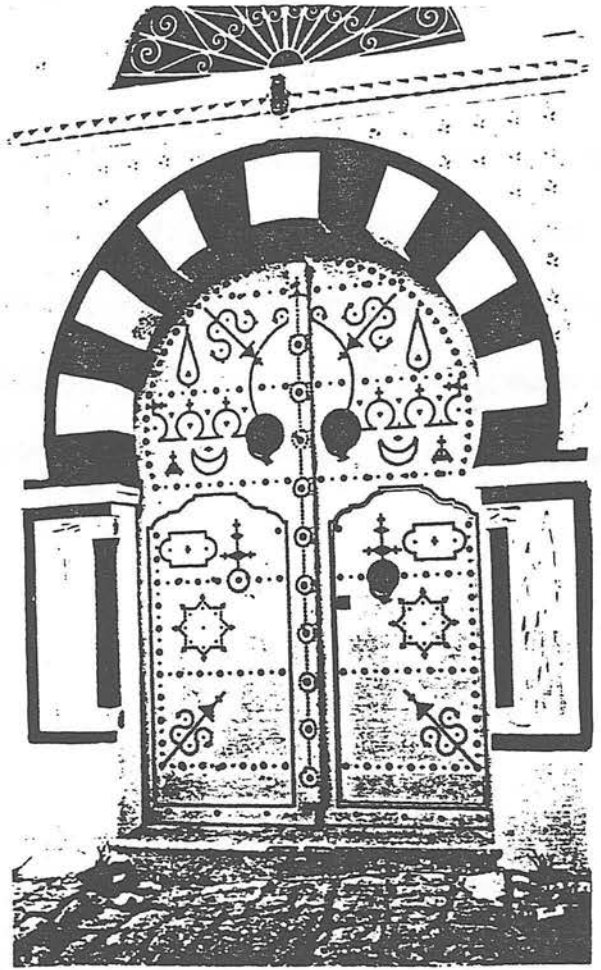
Slimanya, (Stannard, D. 1994). All these buildings have contributed to the coherence physical and urban structure of the city.



**Figure 8.15:** Urban form: showing the area of Suq south of Zitouna Mosque, Tunis. (Source: Hahim, B. S. 1986, *Arabic-Islamic Cities*)

Other important features of the city which emerge as a result of its growing significance are the suqs. The suqs (markets), emerged centrally in the Medina, particularly around the Zitouna Mosque. Beside the Great Mosque goods and trades separated into their own suqs according to the medieval guild pattern. Divisions are not as strict as they were, however; gold and jewellery shops, for example, swamp most of the streets behind the Zitouna Mosque, including suq de la Laine (wool). Other suqs are suq el Leffa, suq el Berka, suq el Bey and suq el Attarine (perfume) and so on, all of them not far from the Great Mosque, (Stannard, D. 1994).

Although the morphology of the city of Tunis is affected by many factors, like climate, social, security, defence, etc, the all over identity of the city remains within the vernacular Mediterranean Arabic style. The conditions that affected the city show the reason which make the width of the street less than the height of the buildings lining it so as to provide shade to the pedestrians. In many cases this has lead to cover the hole streets like the trade streets in the city centre, which embody social and gathering

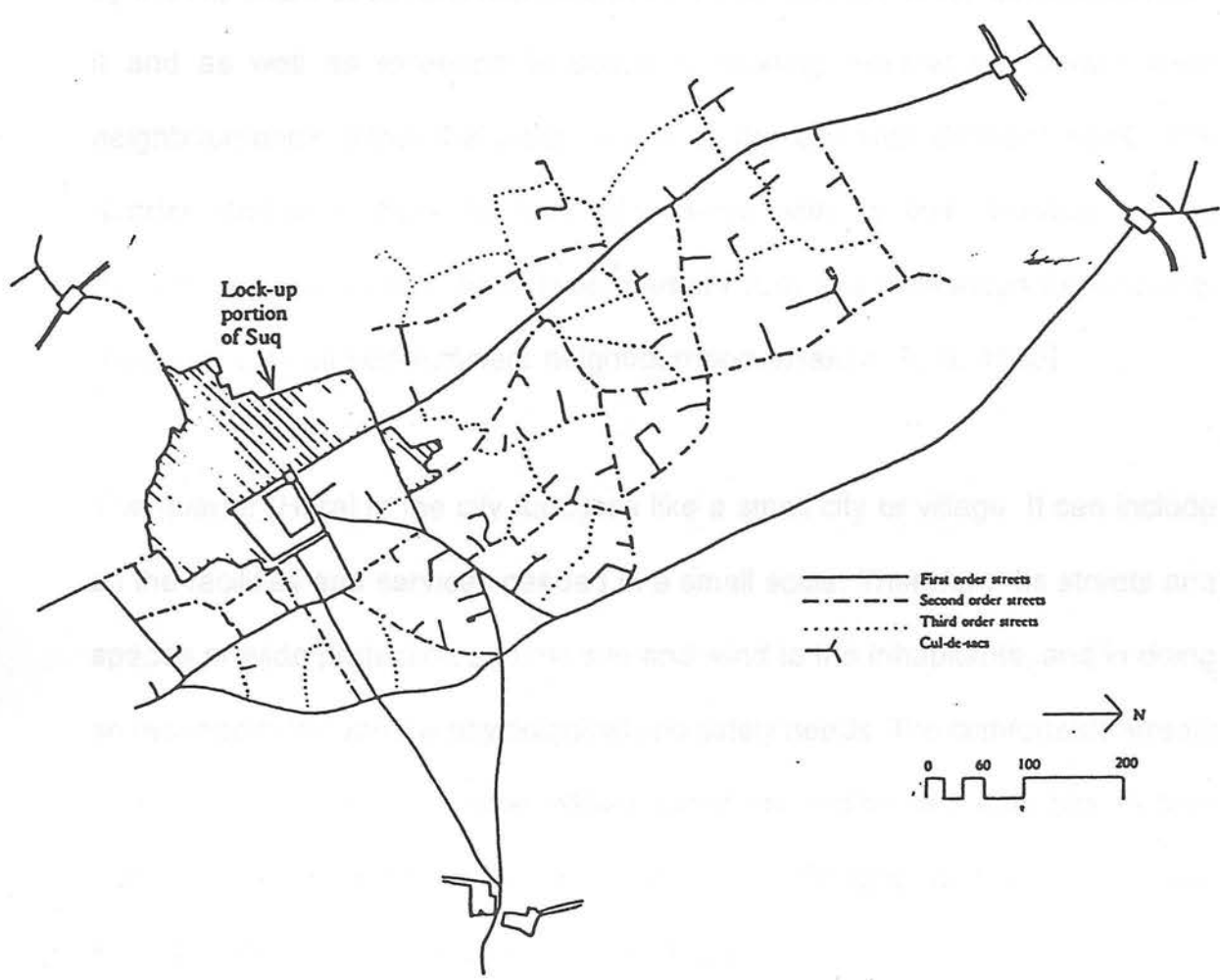


**Figure 8.16:** A doorway in Sidi bou Said near Tunis (Source: Nelson, N. 1974 Tunisia)

events and cultural traditions and ceremonies. It is worth mentioning that these buildings have lead the establishment of the vernacular architecture of the city and which has emerged from the influence of many regions in North Africa (see fig 8.16)

8. 2. 2. 2. The City Morphology (Character):

There are many adaptive features and elements which made the over all morphology of the city of Tunis, such as the neighbourhood structure (Mahalah), the concept of privacy and street doors, the street pattern, the street projection (Sabat), the Market (Suq) and Street Coverage System. All of them grow in a natural process of development which was compatible with and supportive to the cultural heritage of the city.

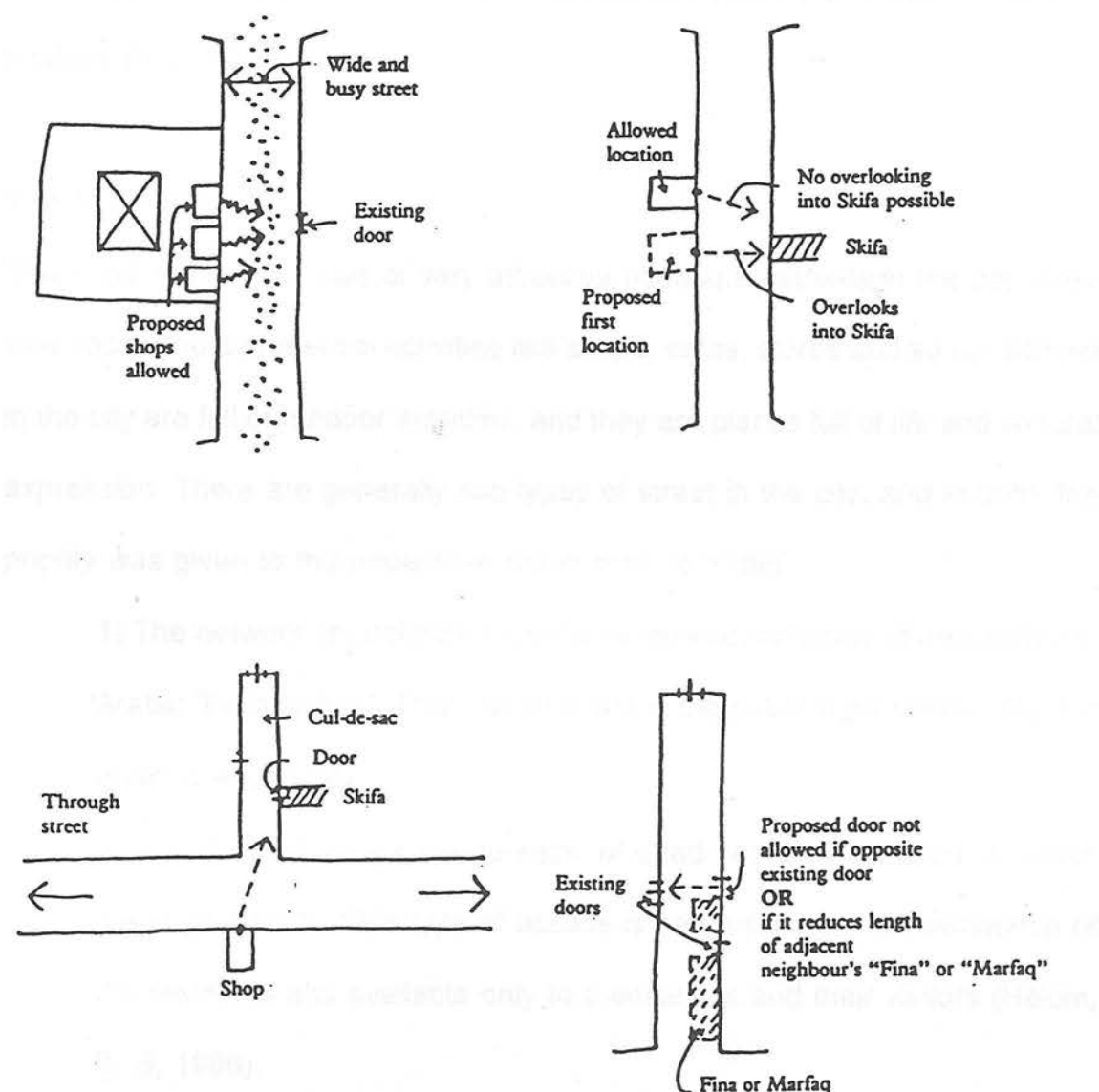


**Figure 8.17:**Tunis Medina: an example of the street hierarchy and typical linkages to cul-de-sacs. (Source: Hakim, B.S. 1986, Arabic-Islamic Cities)

### The Neighbourhood (Mahalah):

Mahalah, Harah, Hay are all different Arabic names for the residential quarter or neighbourhood. Although the quarter system appeared in different parts of the world it became one of the important features in the Arab-Islamic cities in general and in the city of Tunis in particular. The quarter has a character identity which belongs to the social structure, family kinship or occupation and the events which its residents share, forming a strong presence for community life identified in its particular quarter. (Akber, J. 1988). The solidarity of the quarter was reinforced by the important social and administrative responsibilities which developed upon it and as well as extended to police functioning. Hwarat (pl, harah) were neighbourhoods within the urban whole of the city with different sizes. The quarter started to have its own mini centre with its own mosque, school (madrassa), public bath, small local market (Suq) and workshops for weaving, making it a small self-sufficient neighbourhood. (Hakim, B. S. 1986).

The quarter [Hara] in the city functions like a small city or village. It can include all the facilities and services needed in a small scale. Therefore, Its streets and spaces provide protection against sun and wind to the inhabitants, and in doing so respond to the various physiological and safety needs. The comfortable streets and spaces within the quarter allows social interaction and activities to take place. These in addition form a response to belonging and esteem needs. Peoples' affinity to their quarter can be expressed in the attachment of diverse aesthetic qualities to the various house buildings seen in the ornaments and decorations on building facades and streets furniture.



**Figure 8.18:** Overlooking, privacy and street doors, examples of visual corridors.  
(Source: Hakim, B.S. 1986, *Arabic-Islamic Cities*)

### Privacy and Street Doors:

The important concept behind street life in the city of Tunis is privacy. A context that facilitates visual overlooking is considered harmful and must be avoided. A new door on a street or thoroughfare should be set aside from the one opposite unless the street is wide enough that its activity will obstruct the opposite view. Opportunities to allow others a degree of privacy are strongly related to the

Islamic concept of user's responsibility based on the prevention of harm to others, (Hakim, B. S., 1986).

#### The Street pattern:

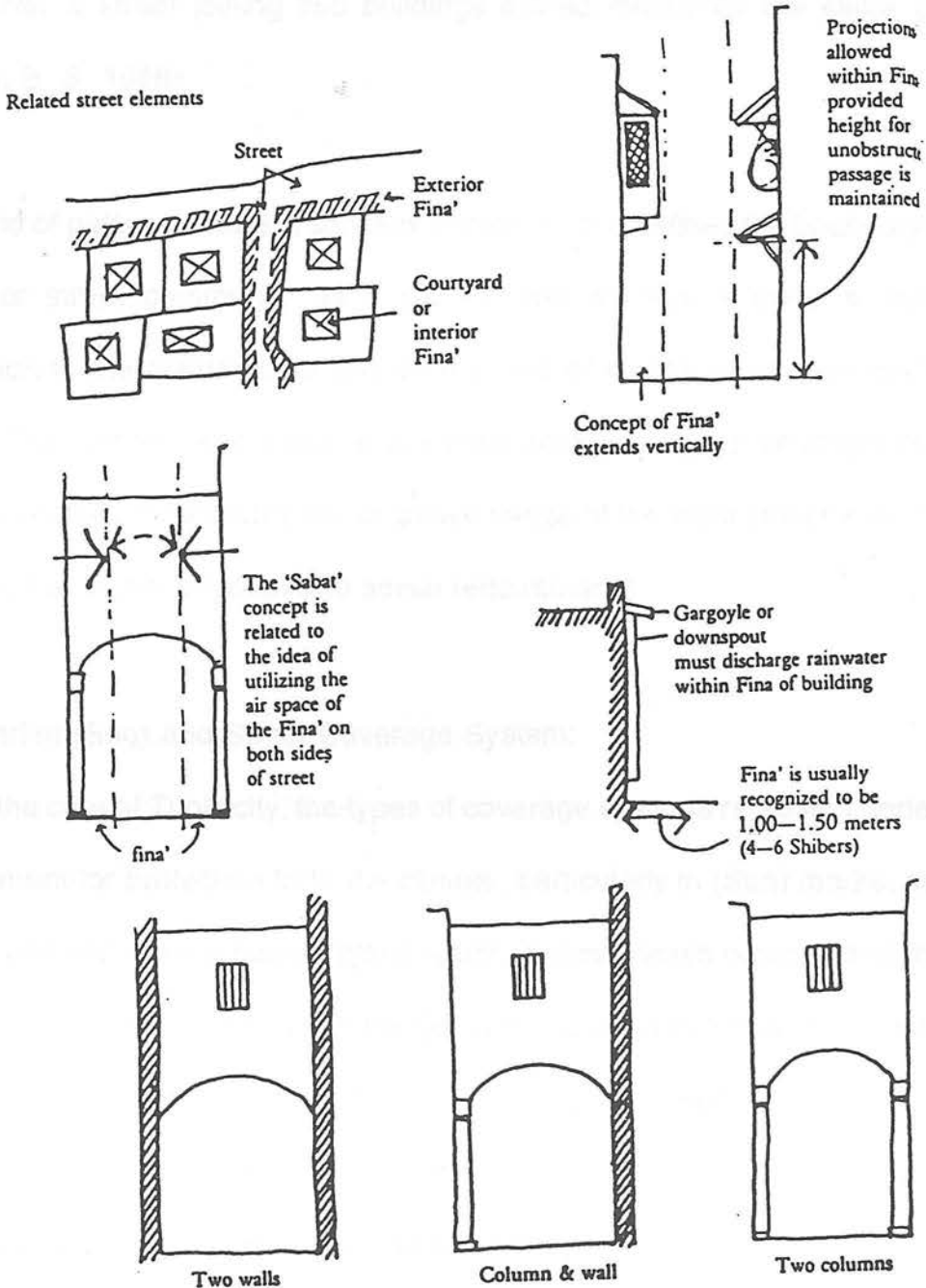
There are many examples of very attractive pedestrian streets in the city, busy with social and commercial activities like shops, cafes, stores and so on. Streets in the city are full of outdoor activities, and they are places full of life and cultural expression. There are generally two types of street in the city, and in both, the priority was given to the pedestrian rather than to traffic.

- 1) The network of public thoroughfares: open continuous streets called in Arabic 'Tariq Nafidh'. This type of street is the public right-of-way and it is open to everybody.
- 2) A system of private cul-de-sacs: of dead-end streets called in Arabic 'Tariq gir Nafidh'. This type of access is not public, is in co-ownership of the residents and available only to themselves and their visitors (Hakim, B. S, 1986).

Orientation, narrowness, and some kind of roofing make the streets of Tunis more comfortable for use by the pedestrians. Arcades, galleries and the porticos, are traditional forms of covered and semi-covered street, supported by columns or walls. The arcade is a covered passage or walk way formed by arches open at one or both sides. These forms are used where there is an extremely hot climate and it is important to have openings which exploit the breeze without allowing strong winds to spoil the street.



Streets play an important role in providing protection to people against physical forces and climatic conditions as physical adaptation. This sheltered environment encourages social activities in those streets and provides social adaptation. Street furniture helps people to be comfortable in using the street and at the same time enhances aesthetic experience of the place cultural adaptation.



**Figure 8.19:** Street element, support system for a Sabat.  
(Source: Hakim, B.S. 1986, *Arabic-Islamic Cities*)

### The Street Projection (Sabat):

There is another feature of the street in the city of Tunis, this is a projection from a house into the street, called 'Sabat'. Its height clearance over street level is also governed by the minimum dimension required to allow people to pass with their goods comfortably. 'Sabat' is a term used for describing the construction of a room over a street joining two buildings owned mostly by the same person (Hakim, B. S, 1986).

This kind of pattern creates a sense of enclosure and defines the boundary of the 'Hara' or street community as a semi-private domain. It gives a sense of protection to the residents as well as a sense of enclosure and identity to the place. This pattern also creates aesthetic pleasure by its arrangement and decorations which facilitates the cognitive needs of the local inhabitants, beside its response to the physical and social requirements.

### The Market (Suq) and Street Coverage System:

Within the core of Tunis city, the types of coverage systems represent pedestrian requirement for protection from the climate, particularly in (Suq) market streets. (Suq) in Arabic means market place which in most cases is located in the city centre next to (Al-Masjid Al-Jami) the Great Mosque, for example in Tunis around the Zitouna Mosque. Suq, Bazaar, Swiqah, Qaisariah, Khan and Wikalah are all Arabic names of elements and components of a commercial life and market place within the traditional Arab cities, (and Tunis is one of them). The difference between these kinds of market are dependant on the function of each within

commercial life and the service they provide for the residents. The functional arrangement of the marketplaces was related to the famous Arabic scholar Ibn Battuta in the fourteenth century.

Ibn Battuta's view of this arrangement of marketplaces has become a stereotypical structural model which a number of scholars continue to use. One of the most important features of the Arabic-Islamic (Suq) system is the division of trades and products sold in group entities and distributed according to a symbolic framework of location in relation to the city's major Mosque. It is based on the interpretation of the trade or product in terms of its perceived or symbolic standing, creating at least three hierarchical levels in terms of acceptable proximity to (Al-Jami) the mosque.

First Level: trades or products encouraged to located close by the Al-Jami, such as bookshops and perfume products. Second Level: trades or products should be placed farthest away owing to potentially offensive noise (e.g. copper making) or smell or to their symbolic content (e.g. footwear products). Third Level: products that do not generate any physical offence and are symbolically neutral. They can be located with relative freedom within the hierarchy, and examples would be clothes, jewellery etc., (based on Ibn Battuta, quoted by Michael E. Bonine, 1977)

The (Suq) was usually divided into different parts according to the different types of trade. Each part was named after these trades and professions. Precious

goods such as jewels, silk, carpets, furs, embroidered and patterned textiles usually had a special building or covered market called qaisariah. Qaisariah and wikalah also refer to a large system of public building laid out in the form of a cloister with shops, workshops, warehouses, and rooms providing accommodation for merchants and others. The khan, on the other hand is a hostel planed around a courtyard, where the ground floor is generally used to house the animals (camels and horses) and also for storage of merchandise, while on the upper floor a number of rooms surround the courtyard where merchants were accommodated.

Swigah is a mini market located within the neighbourhood. It is used as a mini centre for the inhabitants of the quarter to provide for their daily needs. Swiqah usually consists of a bakery, grocery, and some small shops near a small mosque. The relationship between the mosque and the suq is always strong. Al - Aswaq (pl. suq) in traditional Arabic/Islamic cities are always concentrated around (al-Masjid al-Jami), e.g. around Zitouna Mosque in Tunis.

In addition to the obvious physical protection given by a covered market, the structure usually has sense of aesthetic quality by which goods have been displayed in beautiful ways to give people some aesthetic pleasure in shopping as a cultural adaptation.

### 8. 2. 2. 3. The Stable Pattern of Change (City Identity):

The main factors that shaped the tissue of Tunis' urban structure are due to the dynamic decision-making process operating in the city. This was primarily based on decisions by rulers and citizens. Rulers' decisions were macro in nature, creating in most cases a 'planned' effect on the urban fabric, or initiating the building of a Jami, a Madrassa, or extending a road and so on. In other words these decisions had relatively obvious manifestations. Citizens' decisions were more of a 'micro' nature, with less discernible effects than the decisions of rulers, but their aggregate impact on the city was ultimately more significant, and affected the lives of most people directly.

All the decisions made (either by rulers or citizens) concerning the urban structure of the city, were based upon the principle of the Islamic 'Fikh', Islamic jurisprudence according to the interpretation of the Maliki School of law which is dominant in North African countries. These decisions and actions would, therefore, represent the core of the building principles and guidelines affecting the micro urban decisions by citizens as well as macro urban decisions by rulers, or others undertaking building activity, where applicable in these cities, (Hakim, B. S. 1986)

The city of Tunis in general grows in harmony with its inhabitants' needs governed by their socio-cultural values and life style influenced by rules and decisions based on the interpretations of Islamic principles. Any resident in the

city has the freedom to alter the size of his house according to his needs and the number of his family as far as no harm is caused to others. He can also sell part of his house to his neighbour, rooms for example. At the same time he can buy and add to his property some rooms if his family becomes bigger, (Akber, J. 1988).

As the twentieth century progressed the Medina city centre itself began to change in a piecemeal process where it was necessary. Therefore, the city was stripped of its walls to permit the circulation of vehicles around the perimeter of the Medina (Findlay, A. M. & Paddison, R., 1986). Despite all these gradual changes the Medina city succeeded in reserving its identity at all periods as a good example of an Arab city built and developed according to the Islamic principles and Arabic cultural values as well as its inhabitants' needs. Nowadays, there is considerable concern amongst many Tunisians to maintain the character of the Arab city the Medina Centre and its Rabad - the northern and southern suburbs, as the basis of the character of the whole city.

#### **8. 2. 2. 4. Expression of Socio-Cultural Values:**

The key to the morphology of the Arab Medina, as to other components of the contemporary Tunis city lies in the social structure of the society which built it. The family remains the basic unit of Tunisian society. It continues to function as a vital support mechanism for the individual at all stages of life. Tunis city was founded and built according to the Islamic view of the city as the high point of

civilization, as the place of sacred religious institutions and learning and law and order. This led to the creation of an urban form which by its walls and unified architectural style symbolized the separation of the city from the country. The city was also influenced by the Islamic distinction of public and private space which gave rise to a walled city with a complex network of narrow winding alleyways and cul-de-sacs which preserved residential privacy within the built-up area. Therefore, most houses were constructed around pleasant central courtyards, excluded from public view by the large bare walls surrounding most Arab houses, (Findlay, A. M. & Paddison, R. 1986)

In Tunis there is a shared sense of belonging amongst its inhabitants governed by social and cultural Islamic values that effect the city and its development. There are many aspects of social behaviour related to this life style which surely affects the development of the city but the most obvious one is social interaction between its citizens concerning decisions affecting the city. With regard to privacy and social life the arrangement of the dwellings in the city were based on the segregation of spaces into male and female spheres played a major role. The application of private space concepts in a hierarchy of order of open space patterns in Tunis city express, as far as they exist, the almost universal concept of privacy based on religious injunction. The structure of the city manifested in the narrowness of the streets helped to create social interaction among its residents.

From the cultural point of view Tunis responds successfully to the over all



aesthetic quality of the city. This was achieved by the architectural forms which express the aesthetic quality responding to peoples' cognitive and aesthetic preferences and values. On the other hand the city became the centre of religious and social studies due to the existence of the Zitouna Mosque and the establishment of Islamic and social studies which gave the city more prosperity as a cultural city. This led to many thinkers and students seeking knowledge to travel to the city and contribute to its developments.

Therefore, the city is seen as manifestation of ideals and values of Islamic principles which create unity between the city's neighbourhoods and quarters. The structure, morphology, social organization, and administration of the city are a reflection of these religious and cultural values.

#### **8. 2. 2. 5. Conclusion:**

The process of building in the city responded effectively to people's needs in terms of socio-economic, cultural, physical and environmental concerns. This response has been manifested clearly in planning and on the levels of individual dwelling. The architecture of the city provides guide-lines to deal with climatic aspects in terms of orientation, shape, opening, sizes, materials and construction techniques. Furthermore, buildings provide vocabularies and references which reproduce forms, plans, and architectural elements. These buildings also provide examples in terms of scale and proportion, harmony and contrast, open and closed spaces.

The city in general is considered by its inhabitants to be a successful place to live in relation to climate, social and cultural life. The orientation of its buildings and external spaces are arranged to admit cooling breezes or provide protection against cold winds. The closely compacted houses with alleys and streets serve as barrier to sun heat, sand and wind and act as good protection against these elements. The difference between the shaded and the sunlit areas in the streets generates air movement which helps to reduce the temperature particularly in summer. Therefore, the success of the city is related to its morphology or structure which helps to achieve most of people's needs. The study considers Tunis as one of Islamic cities which Paul Wheatly described as:

*"Essentially pragmatic space was scaled to the measure of man. It conformed to the rhythm of a man's footsteps as he made his way, unmindful of his surroundings, through an irregular street plan generated opportunistically by the daily needs of a closely knit community."* (Paul Wheatly, 1976, p.354)

The closely compacted houses also act as spheres of family privacy. The form of dwellings can be planned to maximise or minimise incidental solar radiation. The choice of building materials and window design can control internal temperature without using any technological device. In outdoor spaces pergolas, walls and overhanging roofs can be used to control light and reduce the glare and temperature. The exterior wall resists the encroachment of sand, reduces the effect of dusty desert winds and gives the town a definite boundary

psychologically important to the inhabitants.

This good physical environment of providing protection against harsh weather [hot, cold and wind] allows the city to succeed in its response to physical needs. At the same time the structure of the city provides enclosure and shaded areas in the streets which encourage social activities to take place. When people reach a satisfactory level in physical and social needs this allows them appreciate and love their city by looking after its streets well and decorating their houses. These acts render the city more beautiful and it becomes a place of aesthetic and cultural values in response to cultural adaptation.

In relation to the components of the adaptive model introduced earlier in chapter three and four, there is a mutual interaction between the city and these components, each one affects and is effected by the other. There is a compatibility between built form and the structure of the city. This is achieved by the adaptation process motivated by its inhabitants' needs over a long periods of time according the terms of the reference of the thesis and the model suggested. The city's structure responds to these components as follows:

*[Nature]:* The role of nature is clear from the morphology of the city and its spatial structure, where the city is well integrated with its site and its surrounding nature. The effect of the weather is obvious in the shape of the city's buildings and their style to adapt to its particular environment. Most houses in Tunis have a courtyard, a good adaptation to the climate.

*[Resources]:* The city of Tunis has a variety of resources, economic, political, social and cultural resources as well as raw materials, all of which the city benefit from. Local materials are used for building, as well as the economic and political resources supporting trade relationships with other cities and regions. The city is a commercial centre serving many regions. It has a good reputation for encouraging thinkers and students seeking knowledge, becoming a cultural and intellectual centre contributing to the human knowledge.

*[Built Form]:* There is a harmony in the shape and the style of the city's built form producing unified character. This character was influenced by its previous historical background which gives the city its special identity.

*[Social Behaviour (Interaction)]:* The city of Tunis enjoyed the privilege of a homogeneous community throughout history. There is a strong sense of belonging amongst all its citizens which can be seen in the shared aesthetic and cultural values characterising its people. People have a common social behaviour, life style and customs which shaped the city structure on form of special provisions for privacy and other social activities.

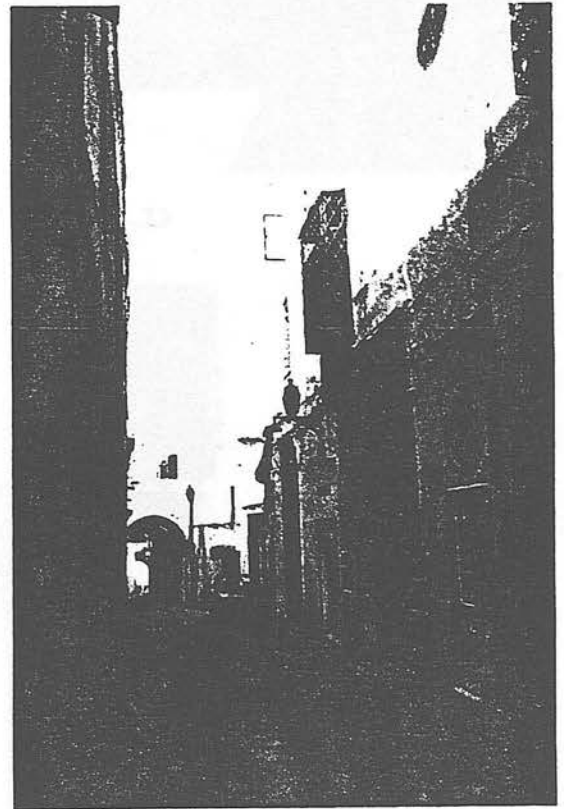
*[Culture]:* Tunis responded in a perfect way to aesthetic and cultural values according to its inhabitants' perceptions, even the addressing of visitors. Tunis has always been known for its beauty viewed in its blue sky, sea

and colourful gardens, in contrast to its white architecture. For its green gardens it became known as 'Tunis The Green' (Tunis el khadraa).

Therefore, the city of Tunis is a good example of a successful adaptation process to physical, social and cultural environments manifested in its structure and its morphology. The city responded well to its inhabitants' needs and their motivations by providing the quality of life they expected and inspired for.



**Figure 8.20**



**Figure 8.21**

**Figures 8.20 - 8.29:** Show the street patterns and Mashrabiya windows around Zitouna Mosque in Tunis city. (Source: the Author.)

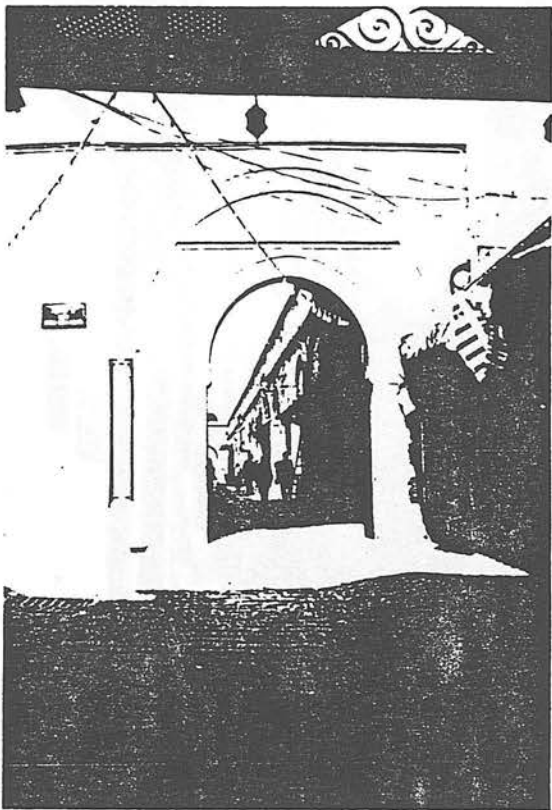


Figure 8.22

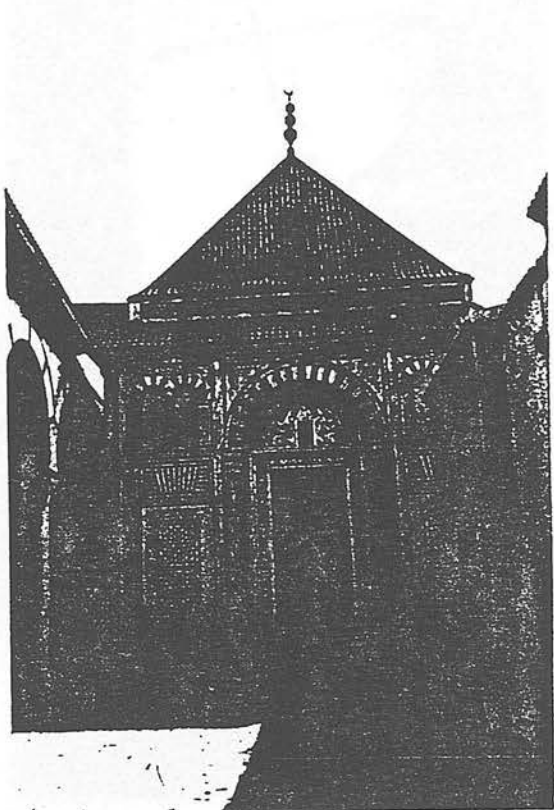


Figure 8.23

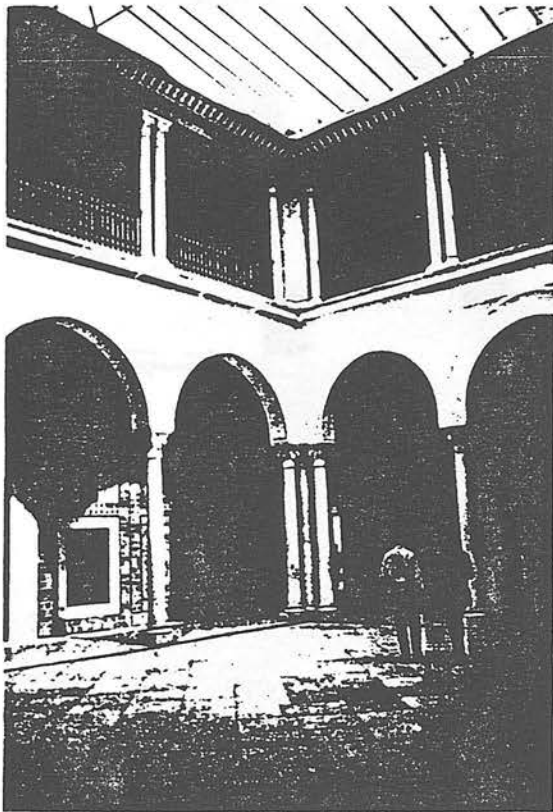


Figure 8.24



Figure 8.25



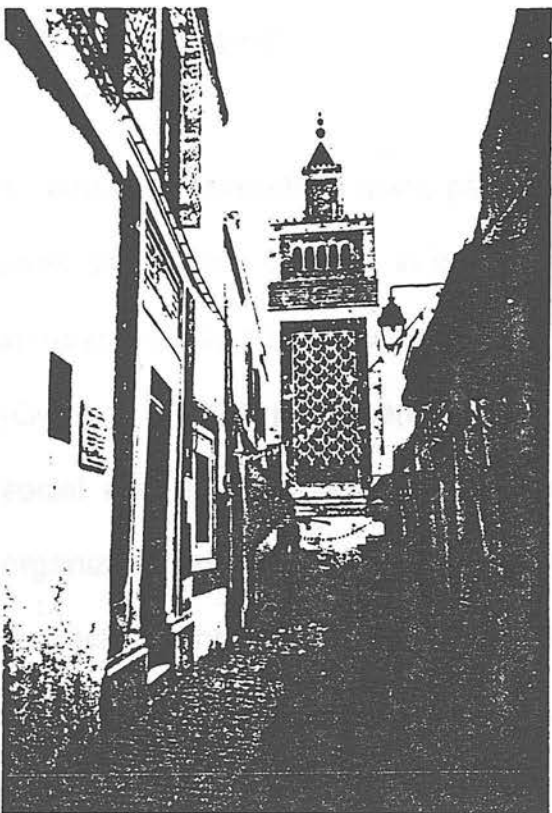


Figure 8.26



Figure 8.27

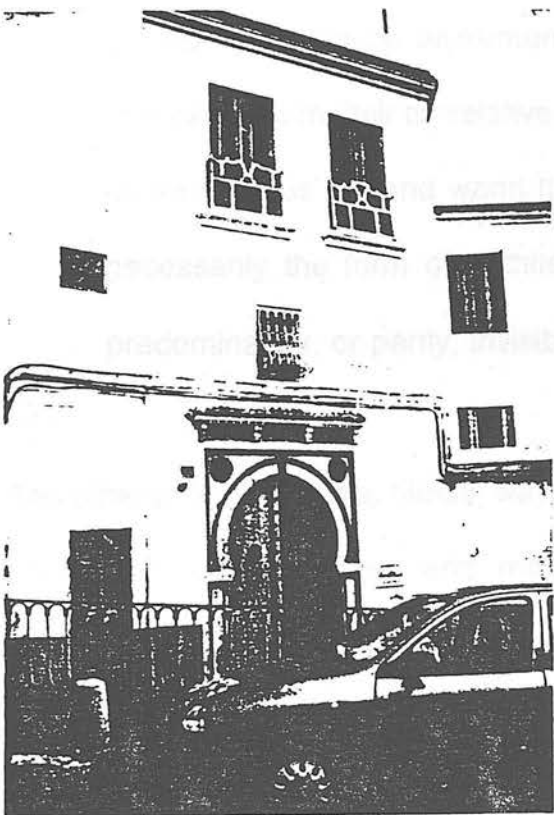


Figure 8.28



Figure 8.29



### 8. 3. House Layout:

A settlement consists of many parts of which the house is one of the important ones and cannot be seen in isolation. *"Two things must be understood to be inseparable: the architecture of the dwelling, and the architecture of the territory."* (Guidoni, E 1979, p.8) Therefore, the house must be viewed as part of a total social and spatial system which relates it to cultural values, ways of life, organization of the settlement and landscape of the site. People live in and interact with the whole settlement of which the house is only a part, and the way in which they use the settlement affects the house form.

"Buildings are the usual formal agents which transmit architectural values; like musical instruments, but even more strongly, they impress us with their correlative presence. They are often so handy for keeping us dry and warm that we perhaps forget they are not necessarily the form of architecture; that is, maybe the form is predominantly, or partly, invisible. (Silver, N. 1969, p.281)

The differences in culture, rituals, ways of life, and social organization, as well as climates and landscapes, and materials and technology available, led to differences between the types of building in different areas or even in the same area are evidence of the role of these issues collectively rather than one is the predominant over the others.

*"Examination of the extreme differences in urban pattern and house types within one area, such as Old and New Delhi, the old and new parts of Fez or Marrakesh, or certain Latin American cities, shows them to be much more related to culture than to climate."*

*(Rapoport, A. 1969, p.19)*

### **8. 3. 1. The Courtyard House**

The house has a variety of culturally derived meanings and associations. It would take a large volume to address this subject. However it was decided to select the Arabic courtyard house as an example of how to understand an architectural phenomenon from the points of views of this study. This analysis is mainly derived from the author's experience as well as from studies that confirm particularly the diachronic and structuralist perceptions (F. Ujam & F. Stevenson, 1995).

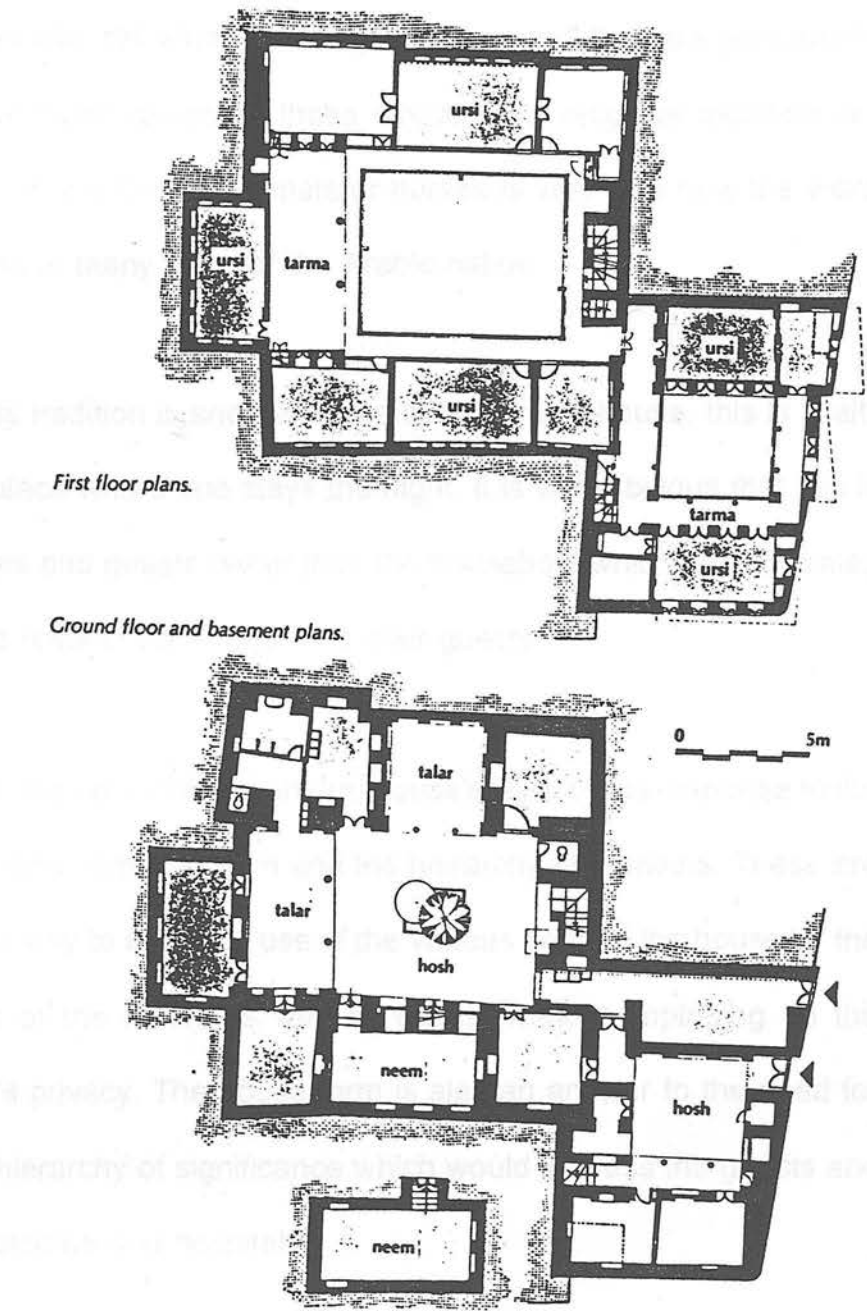
It was stated in this thesis that our perception of any architectural object is holistic in its nature. The responses we make in the experience of a building, for example, will be effected by the various meanings which emerged during the evolution of building form and the characteristics of the different levels of adaptation. Such meanings and associations are, however, embedded in the language and the symbolic values and rituals created by different cultures so that by understanding the semantic structure of the language we can understand the real meaning of built form and its aesthetic qualities.

The word "House" has a variety of semantic implications in the Arabic culture. "Maskan" or "Sakan" means peace and tranquillity, what one experiences in living in the house. Considering the time in which this word was derived, when all houses were initially located in the compact structure of the Harah or Quarter, it suggests the difference in tranquillity and quietness between the narrow streets outside the house and its inner court. Such would not by any means suggest alienation from street life rather than demarcation of a hierarchical order through which various social activities and status are placed. The court is a place for contemplation of the sky and the experience of its strong ritual presence that people have inherited since the ancient times. The experience of tranquillity is not confined to the inhabitants only but also to their guests who come particularly at certain time of the day for peaceful and ritual socialisation and to exchange friendly and spiritual feelings that tie the Arab people.

The presence of women in the house and the awareness of the strong privacy associated with them would also impose a strong sense of reverence and decency associated with the symbolism of femininity in the Arab culture. People would conform their behaviour to express such attitudes of respect and regard to the woman who is considered to be the symbol of the house and the family. Peace and tranquillity can be achieved in the house due to many other properties such as the sense of security and safety, being protected by strong family ties and family systems which are characteristics of the Arab and other cultures.

Another metaphoric name of house in the Arab region is "Manzil" which means

the place where one descends to. It refers to the desire to welcome visitors and guests who arrive riding on their camels or horses and who need to descend to stay and enjoy the household's hospitality. This metaphoric use of the word relates to an old custom of welcoming



**Figure 8.30:** The Courthouse plans.  
(Source: Warren & Fethi, 1982 Traditional houses in Baghdad)

travellers who cross the desert and who feel a desperate need for food and drink. The tradition allows the traveller to descend from his camel and stay at the nearest house he meets in his travels. This also expresses a much broader

meaning of the house than a mere place for the family to live in. Such traditional perception of the house still exists in many Arabic towns that are particularly located near major travel routes or those which have religious significance. Although travelling on the back of camels or horses is very rare now the word Manzel is still in use in many parts of the Arabic nation.

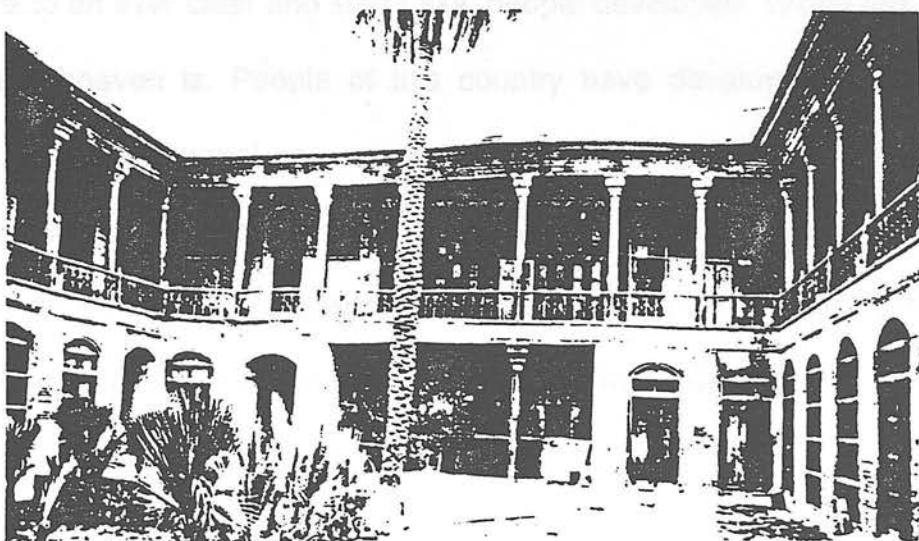
Associated with this tradition is another name of the Arabic house, this is "Bait" which means the place where one stays the night. It is very obvious that this is connected to visitors and guests rather than the household which demonstrates again the care and respect the Arabs offer their guests.

One of the principal features of the courtyard house's layout is its response to the social norms regarding family system and the hierarchy of domains. These are organised in such a way to allow the use of the various parts of the house by the different members of the family as well as guests without impinging on the family's or women's privacy. The house form is also an answer to the need for the provision of a hierarchy of significance which would impress the guests and give a sense of welcome and hospitality.

As a result of this the different parts of the house will have different decorations or architectural quality. Aesthetic considerations are set on a basis related to social and sometimes religious conventions. It follows that these different parts will also be given metaphoric names to assert their meanings or values for the family.

The names of the different parts of the courtyard house do not only relate to social or cultural considerations. Many have their names derived from their climatic or environmental functions. Sometimes the valuable material which is used in the structure of particular sections of the house will give those sections their names. For the Arabs, marble or wood are symbolic materials which are devoted to particular and very important uses in buildings. Similarly planting a tree in the central area would attach reverence and a heavenly sense to it due to the highly symbolic meaning of trees and nature in general.

Although the initial purpose of planting trees inside the court is to modify the temperature, the place underneath the tree has gradually acquired a very important gathering role for the family and the neighbours. Ujam mentioned that children in Iraq are taught that the palm tree planted in the court represents a lady who belongs to the holy family of the Prophet Mohammed (Pbuh). He suggested that this almost mythical image given to the tree is still very lively in



**Figure 8.31:** The Palm tree planted in the court.  
(Source: Warren & Fethi, 1982 Traditional Houses in Baghdad)

his memory and hence results in a profoundly nostalgic feeling associated with the house, (F. Ujam 1995b).

This example which is one among many other similar examples, confirms the role of transformation in shaping people's perception. The physical entity called tree has been transformed into a humanbeing of religious status which is the expression of people's awareness of the value of nature's features in their own setting. It would be extremely difficult to think of a perception of the tree in isolation of its associated meaning. The study has argued that these associations meanings are applicable to almost all features and elements of architecture seen in its cultural context.

It was also suggested by Dr. Faozi Ujam that the ancient people of Mesopotamia who are believed to have developed the courtyard house type first in history, had a very strong reason for initiating the yard. He suggested that due to the exposure to an ever clear and starry sky, people developed strong ties with the sky where heaven is. People of this country have developed a remarkable conception of the eternal space above which they wanted to maintain in the dwelling where they lived. They consider the court as a micro space which is an extension of the macro space above them. It would be very disturbing for these people, even now, to have such a conception altered or obliterated, (F. Ujam 1987).

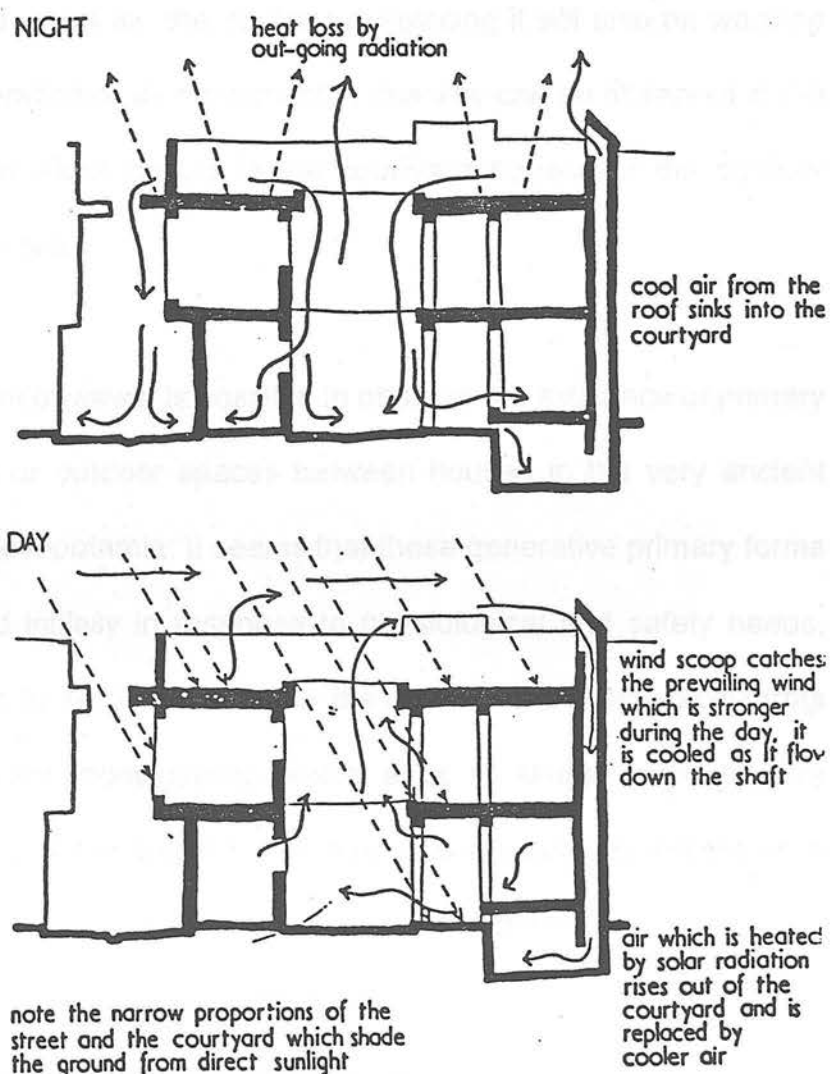
The open court can be seen to have holistic perceptual quality due to its



fulfilment of many aspects of the Arab People. These are derived from natural and socio/cultural values that these people developed over the long historical processes of living and interacting with their geographical territory. The house evokes deep feelings and associations that go back in history to the early evolution of ancient civilisation and all the accumulated images and symbolic values.

It is also very important to state that the structure of this type of house is an

expression of people's awareness of the natural and physical characteristics which were achieved in the architectural form of this house. The social and cultural symbolic features of the house were the outcome of the transformation processes of

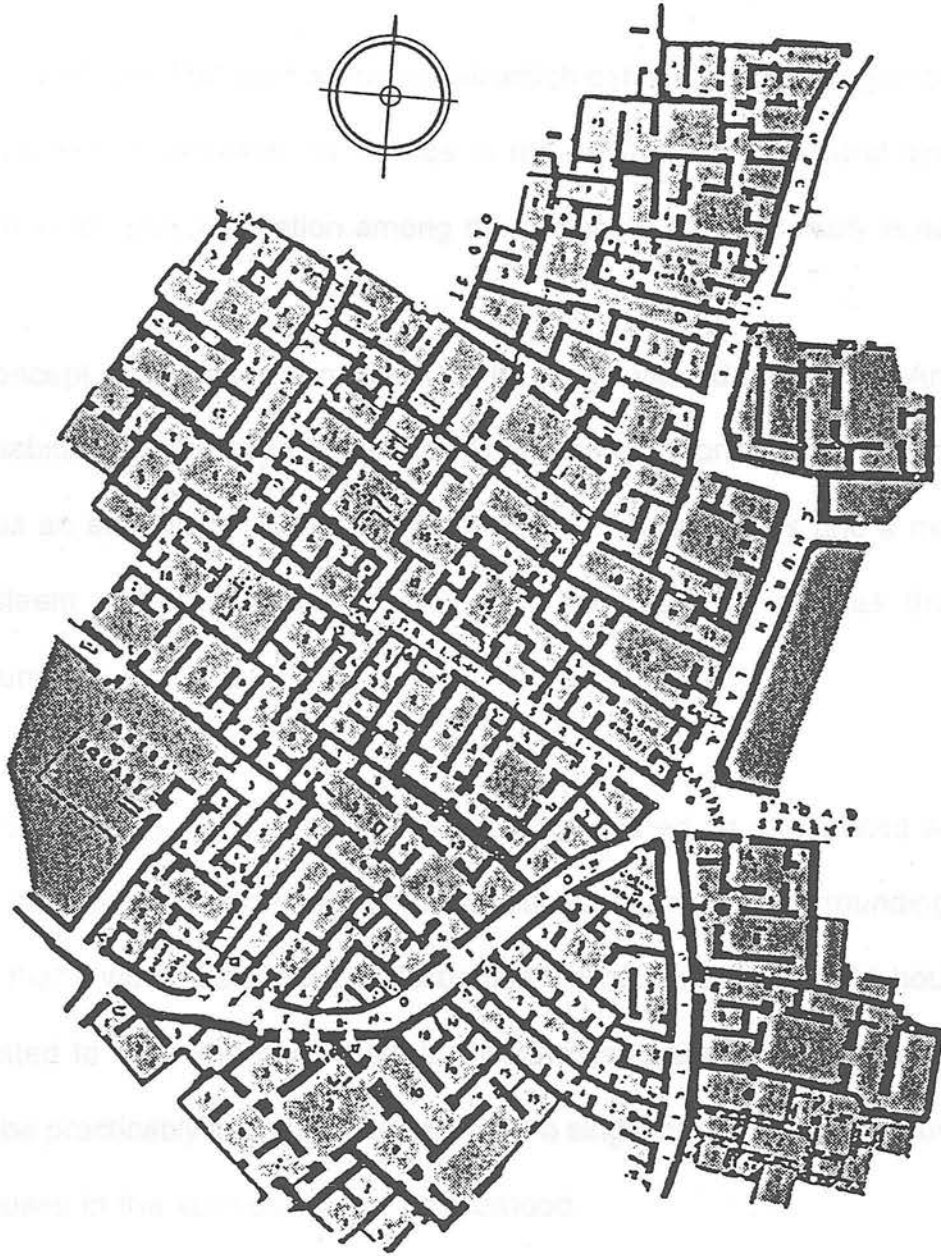


**Figure 8.32: Diurnal air movement in a courtyard house.**  
(Source: Evans, M. 1980 *Housing, Climate and Comfort*)

these physical factors. These were confirmed due to their fundamental values in responding to the place's permanent conditions. The form offers a long lasting solution to aspects of thermal principles as well as to indigenous resources.

In the many studies done on the courtyard house, an emphasis is seen to be placed on the house's form in relation to temperature modification. It is suggested that the courtyard is based on the principle of convection which happens when the warm air rises and is then replaced by cool air. If a heat source exists below the initial pocket of the warm air, the cooler air replacing it will also be warmed and will rise. The generation of air movement in this way can be observed in the natural cooling system which occurs in the courtyard houses or the outdoor spaces around the houses.

From the historical point of view it is possible to observe the existence of primary forms of these courts or outdoor spaces between houses in the very ancient towns particularly in Mesopotamia. It seems that these generative primary forms which were developed initially in response to physiological and safety needs, have evolved over time to become eventually the basis for the prototypical forms from which the different modifications which exist in similar regions have emerged. It would be useful to note that these houses are strongly integrated in the overall structure of the settlement due to the same thermal principles. It is possible to an extent that one may regard the house unit as the cell which shapes the holistic form of the entire settlement including the subsequent social and cultural patterns. This will refer to the spatial structure of the settlement



**Figure 8.33:** The archaeologist's view: courtyard housing in Ur.  
(Source: Warren & Fethi, 1982 Traditional Houses in Baghdad)

having implications contained in the various socio/cultural aspects. We can consider modes of personal and social behaviour, interaction and activity patterns, privacy, proximity and personal distances as well as other ritual and symbolic systems and features as the expressions of higher needs and

motivations, (see chapter six).

The study argues that such a framework which defines the meaning of built form is embedded in language as well as in the aesthetic and cultural symbolism through which communication among the members of any society is achieved.

The concept of society is considered to be highly valued among the Arabs and the inhabitants of this area in general. The coherent fabric of the cities could be seen as an expression of the awareness of the social values and a means for self-esteem and self actualization for the individual as well as the whole community.

Therefore the house can by no means be considered as an isolated entity. Its spatial structure is an extension of the spatial structure of the surroundings to the extent that it would be difficult to recognise the house as a unit. All houses are articulated to draw the one whole of the town and are so tied together that it would be practicably impossible to demolish a single house without destroying all the houses in the surrounding neighbourhood.

This proximity is not confined to the physical connections but certainly to social coherence and unity. People in the quarter share values and knowledge about each other affairs or problems. They all participate in the ceremonies or any other event taking place in any household. Such sharing sets the basis for collective responsibility and a strong and meaningful sense of life quality which is

inseparable from the quality of the place that is lacking and strongly wanted by many modern societies.

The objective of these statements is to demonstrate that the house is by no mean only a building to live in . It is over and above the expression of deep cultural values that define a society and its coherence. It is a product of processes to embody and to fulfil a society's collective motivations and expectations for self esteem and self actualization. Many people who have left these houses are driven back in a move that describes a longing for belonging and identity which brings about a sense of pride and prestige. It is becoming increasingly fashionable for many elite artists or educated people to live now in traditional houses that have been restored or refurbished.

Ones does not intend to beautify the old rather than to assert the principal psychological and cultural values that these houses offer to people. This also suggests solutions to climatic and other environmental conditions that require no expenses or energy provisions which many societies now need to take into consideration. However the mechanical and technological solutions which are offered now in response to energy conservation might not be the answer. People would not appreciate living in buildings that lack meaning or those which fail to evoke deep human memories of the place or its cultural traditions.

### 8. 3. 2. Mashrabiya Window

*"...the window frames a certain part of the environment and makes it into a kind of picture, but one which is changing constantly. The awareness of the outside world is intensified by a small window. Contrary to this, our awareness becomes weaker the bigger the window opening is", (F. Ujam 1987).*

This statement treats the window as an existential element that is lived rather than looked at. Man is constantly conscious about the world that surrounds him. This is seen necessary as the sense of being intensifies as much as man maintains and frames his ties with the world. Every time man moves around, the picture of the world changes and his ties with it may intensify or weaken. During the experience of the world we project our feelings and thoughts about the objects and people we see in front of us. Such experience will be different when we see the world from a window. Our feelings and thoughts will be conditioned by the deep meaning the windows offers us.

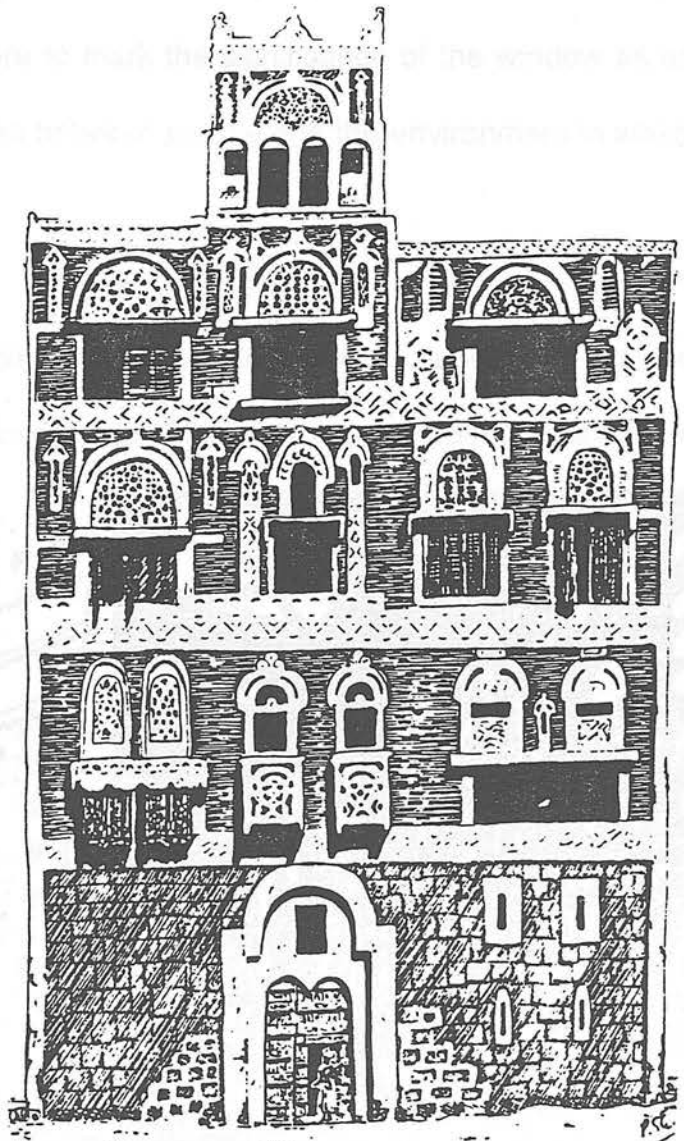
To put this in a different way is to say that we have inherited a variety of images and conceptions of a window that were derived from a different experiences and resources. At an early stage of man's history, the window was experienced in a variety of forms in nature. There, a strong correlation with security and safety from dangerous animals and external forces still characterises our appreciation of the window at present. This association was maintained when man built his



first dwellings. Various other associations were developing in response to the emerging social and cultural systems and conceptions. Privacy, social hierarchy and overlooking were factors that were expressed in the window and which persisted until present time.

Another important function was to control the light and the heat coming in or going out of an internal space. It took man very long time before developing other aspects of his living. The emerging social environments brought a variety of social rules and customs which have left remarkable influences on the environment and vernacular architecture.

Those buildings with small openings in the walls became the expressions and records of people's human aspects and social values that are expressed in

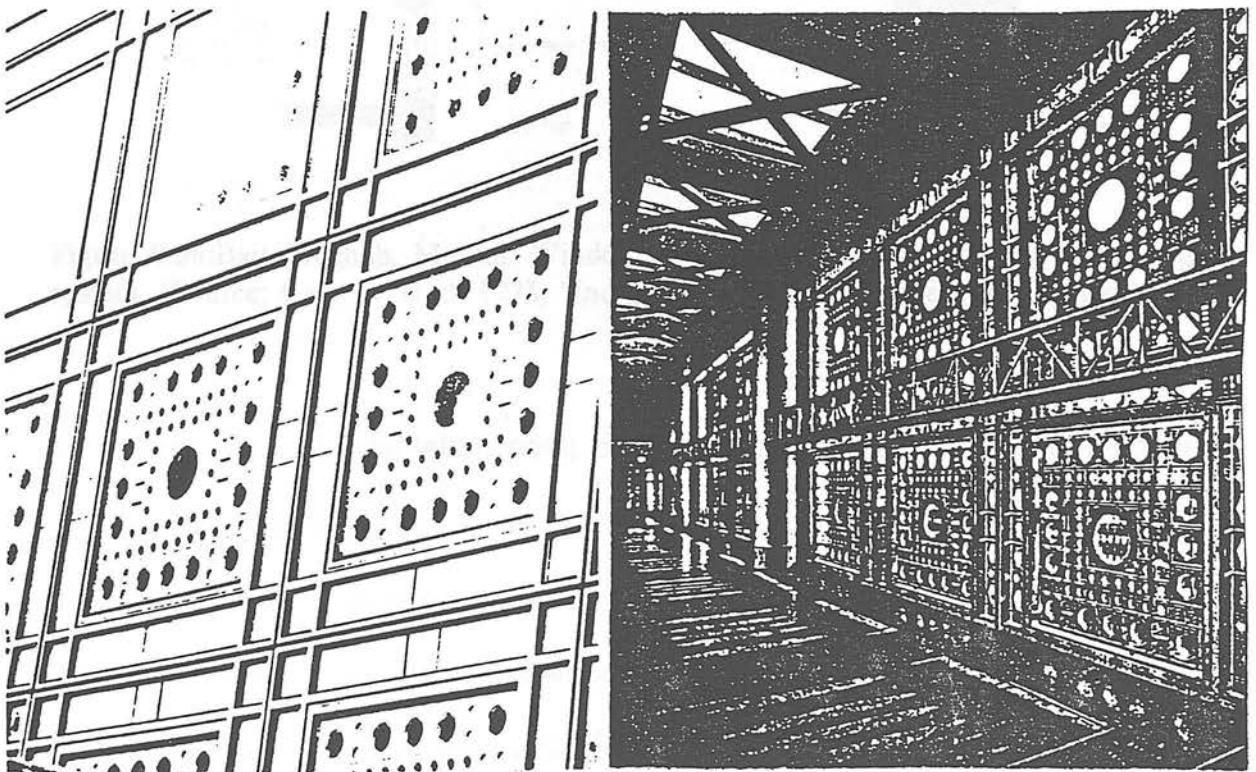


**Figure 8.34:** Composite elevation of a typical house in Sana'a shows variety of windows.  
(Source: Golany, G. 1980 *Housing in Arid Lands*)



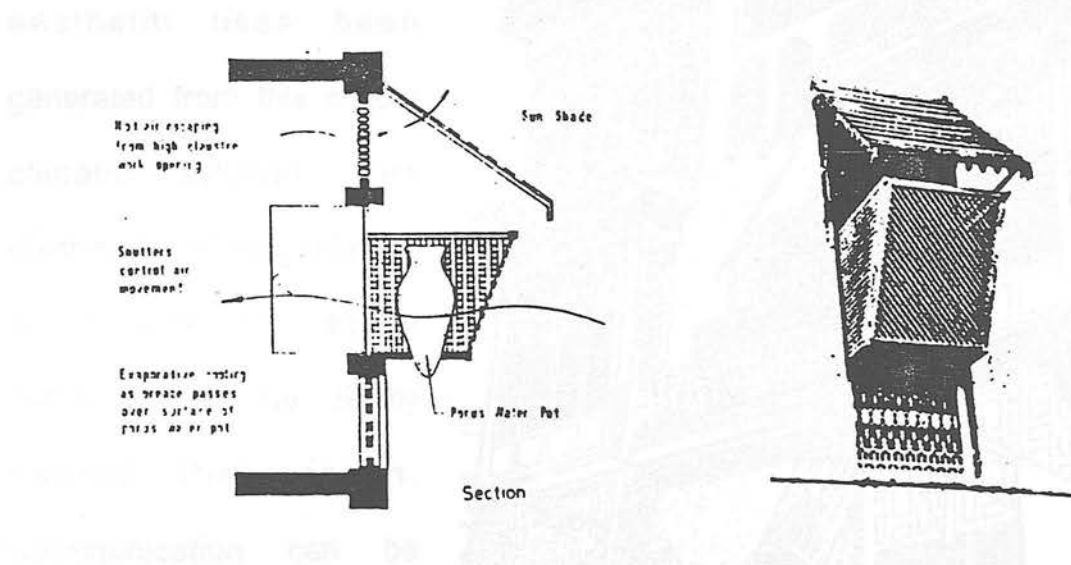
window's shapes and forms. Windows are therefore frameworks through which people define their relationship with each other, with the world and with their culture. The message of these words is that a window is more than a visual feature used to compose a facade. It is an element which evokes a deep memories and history of people and the way to celebrate their existential ties to their environment, (see figure, 8.34). This is the reason why we see the opening of windows in many architectures surrounded by a projected framework or by ornaments. This implies a desire to mark the significance of the window as an expression of a ritual connection between people and the environment in which they live.

The celebration framework which surrounds windows takes a variety of forms and shapes across the different cultures. One of the most celebrated modifications of



**Figure 8.35:** The Diaphragms in the south facade of the Arab World Institute in Paris. (Source: Amin, M. K. 1994 "Man, Environment and Place Identity")

window which exists in some of the Arabic countries, is called the **Mashrabiya**. It simply demonstrates the multiple meanings and social conceptions that are holistically experienced in the perception of the Mashrabiya. For many people, particularly the non Arabs, the architecture of the Mashrabiya became an abstract representation of the Arabic culture, as for instance, in the facade of the Arab World Institute Paris, Figure (8.35). It not only symbolises the adaptive processes to natural conditions and climate that prevail in this area but also the subsequent social and cultural environment.

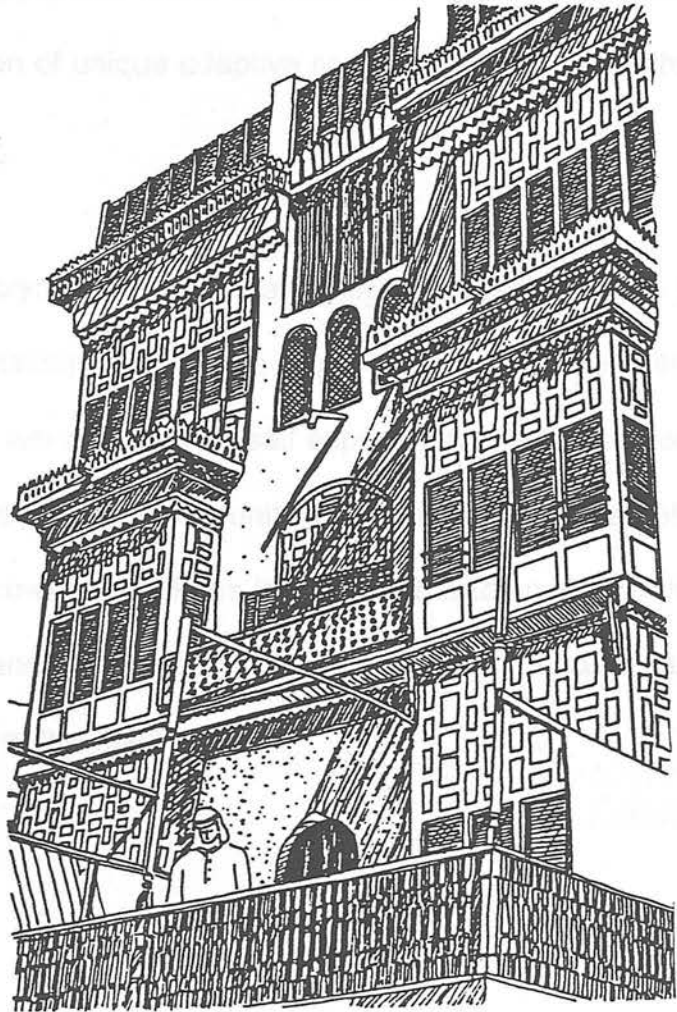


**Figure 8.36:**Bait Mughub, Muscat. Window detail incorporating evaporative cooling system. (Source: Cain, A. et al. 1975, "Indigenous building and the Third World")

From the physical adaptation point of view, the Mashrabiya is a remarkable solution to the prevailing climate. It allows a certain amount of light to pass into the house and the wooden lattice cuts down the glare. The passage of air is accelerated by the design of the wood patterns. In many cases the opening is positioned opposite vegetation which would help both to cool the air as well as to reduce light glare. The name of Mashrabiya is derived from the word drink and

originally means a drinking place. This was initially a simple cantilevered projection with a lattice opening, where small water jars were placed to be cooled by the evaporation effect as air moved through the opening, (see figure 8.36).

The inherent tendency of people toward adaptation and transformation has resulted in various social and aesthetic uses been generated from this simple climatic solution. The Mashrabiya offers a valuable opportunity for social gathering for the family behind the screen. Communication can be easily achieved among neighbours through the Mashrabiya on the upper levels of the house. Quite



**Figure 8.37:**Decorative rowshans and mashrabiyas.  
(Source: Talib, K. 1984 Shelter in Saudi Arabia)

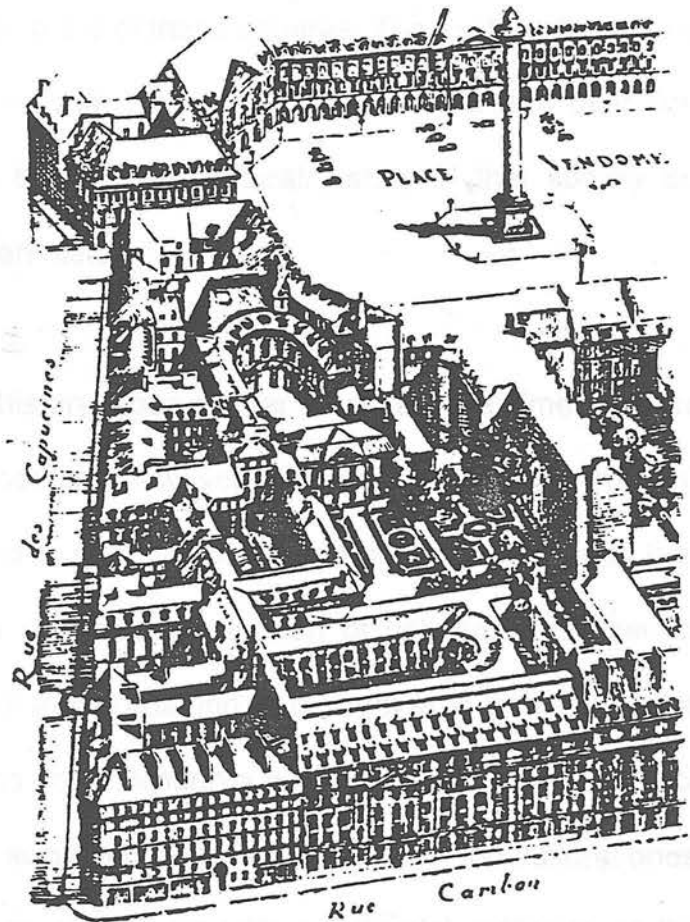
often women of opposite households can engage in friendly chats without being seen by the passers down in the street. The Mashrabiya ensures privacy from the outside for the inhabitants while at the same time allowing them to view the outside through the screen. Passers by cannot easily focus on the interior

because of the difference in light quality between inner and outer space. The inhabitants can stand at the window observing the street without fear of being observed. Such a strong concept of privacy is an important phenomenon with in the Arab social traditions. Most of this tradition can be considered as the result of the high proximity and compactness found in most of the Arabic towns and which have lead to the evolution of unique adaptive social roles and norms that are regarded by all people.

As stated earlier, the Mashrabiya has become a highly expressive feature in Arabic architecture. Many variations which are impressive in their aesthetic effects can be observed which aim at achieving self expression and self esteem for both the individuals as well as the community as a whole. The aesthetic treatment of these variations however confirms the basic characteristics of the physical and social functions and evokes the sense of authenticity and holism experienced in the perception of the Mashrabiya.

### 8. 3. 3. The Column

The column is one of the most significant elements of architecture that carries with it profound memories of human evolution. A society celebrates its civic and architectural achievements through the use of columns in its monumental buildings as well as in evoking a strong and collective sense of cultural nostalgia. Many cities have erected free standing columns in



**Figure 8.38:**General view of the Place Vendome, Paris.  
(Source:Baritou, J.L. 1978 Chevotet. Contant. Chaussard ..)

various squares to generate a sense of place and to facilitates gathering and sense of belonging. Great architects of the even very recent past have understood the value of this architectural feature. They used the formally articulated column in their designs for important civil and cultural buildings such as museums, galleries, academic and political institutions and the like. These buildings have a strong meaning to the public at all times and therefore columns would be the most relevant object which confirms the timeless quality and



symbolic value of these buildings. Similarly, civic squares express the ideology and sense of collectiveness of society which would be best confirmed by the use of a monumental column in the centre of these squares. The explanation for this is the deep and global meaning that the column has accumulated over time which does not only express the specific cultural history of that society but extends to early times of human history.

The idea that the column's history goes as far back as the time of early herdsmen seems very interesting. However, there is no doubt that the herdsman's stick was used also to mark his place and his territory. For so long this seems the main function of that early version of column: a marker for physical territory. The history of transformation of that physical territory marker to aesthetic territory marker has gone through a variety of other territories such as the structural, architectural, social, economical, ideological and cultural ones. The history of architecture may provide us with substantial evidence of this theme.

Fletcher, 1897 explained that the primitive structure in ancient Egypt was composed of reeds bound together and placed at intervals vertically in the ground. Joining these reeds were other bundles laid horizontally at the top which bound the heads of the uprights together. This was the origin of the characteristic cornice which was due to the pressure of the clay roofs on the upright reeds. A very distinct recollection of the primitive reeds tied together at intervals and crowned with the lotus bud is found in the later granite column and capital.

Examples in stone of capitals and columns derived from timber and reed originals were then copied and spread to the Greek and Roman world till very late stages (Fletcher, 1897).

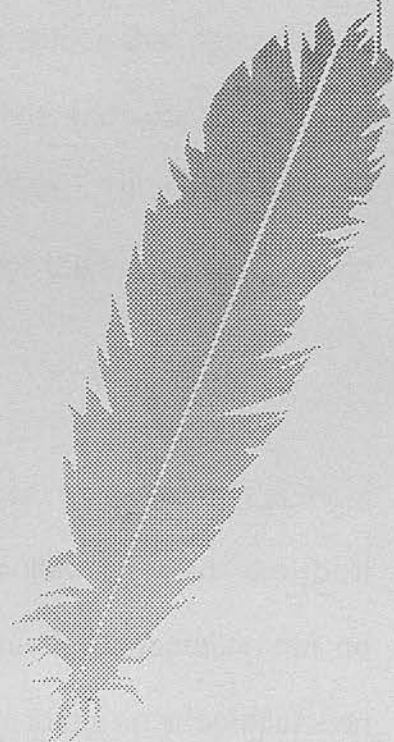
No matter what form the column took particularly during the evolution of great European architectural styles or those in many other native countries, the column remains a valuable element whose real perception extends beyond its structural function.

#### **8. 4. Concluding Statement:**

The aim of these examples as well as the others introduced earlier is to demonstrate that architecture is a structure consisting of elements whose real meaning goes much beyond their synchronic appearance as physical entities. All of these elements or components have acquired transformational meaning laid in many territories of human affairs which are holistically bound to each other and which are responsible for the systems of change that societies bring about in their environment.



## CONCLUSION



## CONCLUSION

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Both the excessive and growing theorisation in architecture as well as the contradictory approaches observed in building designs have given rise to the interest in the subject of this thesis. The initial intention was to question and find out about the source from which architecture developed its patterns which is the subject of peoples' responses in their perception of building quality. What is more important is to know how these patterns have developed and to discover the processes which guided their evolution. The section in this thesis on perception has shown that perception can be effected by the process which may have a kind of presence in the human mind rather than the product itself. Yet there is a history for such perception. The thesis was driven to the idea that perception is conditioned by long and historical processes of evolution and adaptation to the environment to suit man's varied needs and aspirations. This was seen as relevant to the attempt to understand architecture through the expression of place and its cultural context.

The idea of an adaptation process is not new, however, only very few authors have explored this concept in connection to architecture and the built environment. It is also important to mention that literature on adaptation has no single language nor has it a unified framework. Different ideas on adaptation can be seen scattered across different disciplines, in particular Biology, Anthropology

and Sociology. Adaptation has been studied within different levels of human affairs which are mostly unconnected. For example very little research is done on the relationship that might exist between physiology and social adaptation and the impact of this relation on built form. This is also the case when considering the impact of physical adaptation on shaping the social and cultural systems.

The thesis concentrated on the elaboration of the fundamental links that exist between the different levels of adaptation and motivation of human needs. This finding can be seen as providing an important framework for understanding the phenomenon of architecture through its symbolic meaning and aesthetic quality, which forms the key issue in architectural theory. The application of this finding is also important in the context of designing for different countries of different cultural values and life styles.

On the other hand there is the issue of the motivations behind fulfilling human needs and how these can affect and shape man's cultural perception of the quality of the environment. Adaptation is a process which involves the total population and is oriented towards the external physical forces and factors. The study has also asserted the necessity to study the mechanism of how internal forces can affect the environment through the fulfilment of the individual psychological needs.

In order to respond to this matter the author introduced Maslow's Model of Human Motivation which makes an important theoretical contribution in this

subject. Although the theory was presented within the domain of psychology and human behaviour, it certainly has a tremendous value in relation to architecture which concerns this thesis. The hierarchical order of human motivation established by Maslow's Model was a useful instrument in finding out the hierarchical order which exists between the different levels of adaptation in architecture.

It was possible to establish a hierarchy of adaptation levels by relating the different motivations of needs, within their hierarchical order in Maslow's Model, to each level of adaptation whose concern corresponded to the characteristics of each particular motivation. At the same time this was seen as setting up a framework for understanding the nature and value of architectural patterns and their constituents according to their correspondence with the various levels of adaptation. The aim was to introduce a view in architecture which derives its postulates from the concrete basis of more humanistic and contextual resources. The aim was also to examine the current concepts and interpretations, particularly those which tend to isolate architecture from its evolutionary antecedents that are responsible for people's appreciation of their own architectural traditions and cultural values.

Another important aspect of this work relates to architectural aesthetics which form the main concern of both architects and theorists. The aesthetic quality of building would not be seen as the abstract expression of some kind of rhetorical premises. It can not be seen either as an interpretation of an epistemological

notion whose main concerns can only be expressed through visual quality or composition. The study intended to show that many aspects of the aesthetic quality of architecture were the result of transforming physical characteristics of practical and environmental origins into symbolic features within culture. Such features are cultural-specific and can be best assimilated, mostly subconsciously, by the people of the culture in hand. It follows that aesthetic and cultural features are inclusive of the practical aspects of the physical and the social environments. Adhering to the culturally specific aesthetic quality would necessarily mean responding to these fundamental and basic needs.

It would follow that architects should adopt a method of analysis based on the cultural values inherent in a place and to create awareness of the contextual principles behind architectural forms and patterns. This could be achieved through tracing the origins and the evolution of these patterns in their adaptive processes to their environment and how they respond to human needs. Certain examples were introduced for the purpose of confirming the hypothesis by enabling us to understand the various physical, environmental, social, cultural, and religious factors implied and which give the forms their real meaning. This means to go beyond the synchronic perception of phenomena and to discover the process which lead to those patterns through a diachronic analysis.

The outcome of this study could be summarised as that: the relationships between human desires and the aspects of the built environment are a more complicated issue than we think. Perceptions, preferences, and expectations of

the human being to environmental quality are conditioned by a complex network structure of needs and motivations manifested in life style, cognitive and cultural values. They vary from culture to culture in their significance and the priority in the hierarchal order. In any environment there are many forces operating and at the same time affecting its social and physical structure which ought to be identified and properly met. There is a necessity to widen our knowledge and to design and plan with much care about these issues and that we do not take our decision on merely visual observations.

We have to understand Architecture as the expression of regularity of broader physical, social and cultural contexts. Architecture is the demonstration of peoples' awareness of existing factors affecting their perception and attitudes towards living conditions encountering them. Therefore, the aesthetic quality of a building has to be seen through the process of transferring and promoting the meaning of the physical features into a higher form of aesthetic and cultural experience. In this respect architects may need to consider designing with regard to people's sense of the place, their expectations and needs .

The levels of the adaptation process are motivated by the priority of human needs which become the bases of these levels of adaptation and dictate them in the long run. These levels were expressed visually and spatially in architecture and built form. On the other hand the study argued that it is possible that these levels of the adaptation process are the source from which the concept of culture came. In reality these levels must not be seen in separation but as holistic entity



which embodies them collectively in the form of culture.

The study also concludes that it is improper to separate higher needs, e.g. cognition and aesthetic ones from the lower needs of utility and function. Focusing on function only, for example, would direct architecture to be concerned with utility only which may well lead to reduction and the abandonment of many prominent appearances of architectural quality that are appreciated by people for their cognitive and aesthetic significance. The concern with the higher needs only, i.e. aesthetics, may well lead to that building losing its function as a means to an end in the fulfilment of basic and higher human needs.

The study has introduced a model that embodies the process of adaptive transformation between the three levels of adaptation, i.e. the physical, social and cultural, motivated by human needs. The aim of the model was to introduce a hypothesis concerning the link between adaptation levels and human motivations as a tool for understanding architectural phenomena and their interpretation.

From physical adaptation it has been known to all of us that man's survival depends upon his ability as an organism to keep his internal environment stable in spite of the endless variations of the external environment. At this point we come to appreciate the significance of the regulatory system which the body has to respond to the environmental stimuli. This important system enables people to adapt to their environment and at the same time to lead them to alter the environment to suit their needs and their body requirements. Man has a limited



capacity to adapt himself to a particular environment, so he employs physical resources as well as socio-cultural behaviours to aid him in coping with these circumstances. Choosing the location of the site was influenced by its closeness to other resources like food or water, materials, economy, technology and so on. Peoples' perceptions of space and form, while largely effected by their desires and expectations, are also affected by the influences of the natural environment and their appreciation of it. At the end the dwelling embodies the values of the group to which it belongs. People attach significance to their buildings expressing their values through the location of the house, its orientation and symbols of decorations, which reflect their beliefs and aspirations.

The influence of social organizations and sense of belonging of the built environment is obvious everywhere. The case study on an Islamic community shows that Islamic architecture (as any other architecture) puts emphasis on the significance of a sense of belonging of the community and its prosperity which acts in harmony with the prosperity of the individual. This has been well illustrated with the notion of responsibility and control through communal rules of conduct and sharing throughout the whole community. The important thing here is to confirm the significance of social life style motivated by a sense of belonging and esteem needs is reflected in the built environment and architecture responding to the varieties of peoples' needs and aspirations.

Culture is the important and most dominant factor of all adaptation levels. It consists of many components like cognition, perception, schema, as well as

aesthetic values. Most human behaviour is influenced by culture, the system of shared symbols and attitudes that distinguishes a group of people from others. Each group has different priorities and evaluations of these components which affects their preferences and choices. Culture for many people is the result of the interaction between them and their physical environment as a result of which they develop knowledge and social behaviours that characterize their culture. People in general have a collective conscious agreement on many things related to their culture and each individual has the ability to know the appropriate behaviour in any situations.

The built environment is a structure that consists of elements whose real meaning goes much beyond their synchronic appearance as physical entities. The meaning of the built environment acquires a deeper diachronic transformation as a result of the analysis of the events which shaped it as holistic entity responsible for the systems of change that societies bring about to their environment. Change has to be conceived and introduced as an expression of the intrinsic need of that culture in hand. On the other hand change is not arbitrary but is the expression of regularity and order which exist in the structure of transformation. This structure and its evolution is demonstrated through the notion of adaptation and is motivated by human needs.

Change is intrinsic to all living organisms and institutions, but the anchor of change is continuity safeguarded by a kind of structure of regularity and order. In other words, change, while essential is not arbitrary; it is the expression of an

underlying structure of transformation. The thesis has demonstrated the characteristics of this structure and its evolution through the two notions of adaptation and human motivation. It is hoped that the work has set up a basis for a concrete understanding of the phenomenon of architecture.

Change according to this study is a process of transformation within a particular structure which exhibits a kind of regularity that exists in cultures. Within this comes the definition of quality which is currently defined in terms of standards mostly derived from and related to international mass values.

The thesis suggests finally that the task of seeing architecture from this adaptive perspective should be the core of architectural education. The dilemma is that these non-contextual concepts are too general and extensively theoretical. In other word they are not derived from the real existence of people and their needs, identity and expectations. It is the right of the different cultures to operate their architecture in relation to the cultural traditions that represent centuries of industrious adaptive efforts to introduce to its future generation strong bases for their survival and continuity on this planet.

## Further Research and Recommendations

The author can not claim that the work has come up with a final answer to the architectural or planning problems that are facing certain societies, nor does it claim to have built a decisive and comprehensive theory of architecture. The aim was to invoke a line of thought which would construe the phenomena of the built environment within a contextual and adaptive perspective. It is argued, that the work can be seen as opening up opportunities for concrete design interpretations which would encourage more creative and sympathetic solutions to the needs and expectations of people within their cultural territories. It could be argued that because the decreasing role of people in the creation of their environments, this role is now taken up by designers who therefore they should be equipped with the collective experience and knowledge that people have.

The real meaning of the above statement is that concern should be given to the pre-design process before embarking on design production. A thorough analysis and in-depth investigation of the various physical and non physical aspects of place should be undertaken. This, the study argued, should be done on a basis of a contextual framework which acknowledges the indigenous factors and resources of culture in hand.

*"There are people who assume that the goal of environmental design research is to produce a technical, mechanistic process of design that combines the elements of built form into a totally*

*rational solution that solves all problems. No empiricist can believe this. Design is and always will be an argumentative process. There are limits to our understanding of phenomena and .... we deal with a multicultural world filled with people with varying aspirations."*

(Lang, J. 1994, p.357)

What happens in the context of many developing countries in particular is that designs which are applied are those usually produced somewhere else to suit different environments or follow certain rationality, scientific methods or ideology. On the other hand we also have designs produced locally but on the basis of narrow criteria which exclude many important aspects of people's preferences or their indigenous cultural needs. It is important that decision makers and designers be aware of some methods of investigations and research techniques. These are particularly useful to unravel hidden aspects that are crucial to achieve the quality which is specific and unique to the social group or community in hand.

Some aspects of the outcome of this research are related to a number of further issues which are found to be important and require further research and investigation. Some of these investigations are academically oriented. Others have to be carried out by decision makers and design professionals prior to design production. The author suggests that the following further research proposals are themselves recommendations as they emerge from the development of the study itself in the form of areas of concern.

## ONE

It is very important that the main concern of those in authority should be the adoption of policies which encourage people, architects and planners to be more aware and appreciative of their culture. The affinity to cultural values and their expressions in the built environment is necessary for the continued use of the valuable and priceless indigenous knowledge and resources. These are needed for the production of a built environment which is compatible with and supportive to people's preferences and aspirations. This can be achieved by the dissemination of such awareness through exhibitions, documentary films and most importantly formal and informal education. The aim is to identify the practical values of the aesthetic features and artifacts whether in architecture, art or indigenous technology and to make full use of these in the development of the country.

## TWO

It will follow that people will be naturally motivated to take up an important part in the production and maintenance of their own environment. This is clearly one of the most important phenomena which concerns researchers and authorities currently observed in many countries. People's participation has a tremendous and multifaceted values. These values may range from strengthening community ties by the interaction opportunities offered by participation, to saving energy and efforts usually carried out nowadays by the various authorities and social organisations. On the other hand the exchange of information within informal social channels will confirm and enhance the humanistic nature and quality of the

environment where people live.

### THREE

In order to make participation possible, it is important to make available all experience and knowledge about the main aspects and features of the indigenous architecture and its typology. Education plays a very important role in bringing up the young generations with such knowledge which should be developed and nurtured not only through the formal and institutional education systems but through the social environment.

Indigenous architecture should be studied and hence introduced on a basis similar to that of the architectural patterns concept with more emphasis being placed on tracing the origins of these patterns from their native ecological and cultural resources. These patterns could be offered, as Alexander suggests, as a language which is used and shared by people and designers in a holistic way in order to avoid fragmentation which is observed in many contemporary developments.

In connection with what has been said it is possible to identify a number of research projects and investigations to be carried out by architects and environmental researchers. The objectives of these research projects are to demonstrate the various meanings and associations embedded in these patterns such as the social aspects, energy principles and the psychological aspects.



## FOUR

Methods of research should be chosen on a basis related to the objectives of each of these research projects. The most frequently used technique is that which gathers information about patterns and architectural solutions through examining people's responses in which they express their preferences and desires. Many theories can be useful in guiding such research works. Cognitive psychology and its research methods on cognitive responses and cognitive mapping have been increasingly appreciated in fulfilling such tasks. These should be incorporated in architectural education which should not be limited to the study of architectural theories and their history particularly within the current context, as is the case in most of the schools of architecture nowadays.

## FIVE

Architectural conservation plays a very vital role in creating attachment between people and their architectural and cultural heritage. However many third world countries are still unfamiliar with conservation and as a result many valuable traditional areas have been allowed to disappear. Architectural conservation should be taught and encouraged particularly on the basis of identifying solutions which are useful for the countries' future developments on a more affordable and sustainable bases.

The introduction of architectural conservation will create opportunities to diversify architectural education and will offer means to safeguard the country's valuable heritage. Within this framework, aspects related to building technology, materials

and skills can be made known hence provide sources of inspiration for future creative designs that are sympathetic to the culture in hand.

It is therefore very important for these countries to have the chance to exchange experience with countries who developed experience in the field of architectural conservation. This could be achieved by training architects and relevant professionals on methods and philosophy of conservation within a cultural framework.

## **SIX**

There should be an ongoing test of both traditional and new architectural design solutions. This is an area which will generate a dynamic and constructive debate on architectural thinking which is necessary for the continuation of development and more progressive architecture. The adoption of such an approach will enforce the intellectual environment and will maintain open channels of communications among people, designers and the authorities. Areas in need of research are those related to appropriate building materials and technology, social and community implications of architectural thoughts and the role of people in responding to the architectural debate.

## **SEVEN**

In many countries documentation of architectural heritage is not considered important. Many international organisations nowadays are very concerned about the loss of traditional knowledge. It is therefore very important to open up the

opportunities for such research to take place and to be organised. The research will also include handicraft and local technology methods particularly those which are related to buildings.

## **EIGHT**

Planning and urban design policies and their implementation should be tested against a broad perspective which includes the social and cultural value systems as these will allow the reflection of people's preferences and allow them to fulfil their role in the production and maintenance of the environment.

## **FINAL WORD**

The objectives of these observations are based on the postulate that peoples are connected to their environment through past experiences and the values that they share with each other. These values and sets of rules are not arbitrary. There is a great need to understand these forces and values particularly because they affect the way people interact and build their own environment. There would not be any necessity to study this matter if people continued to participate in the creation of their cities and dwellings where they live. People have lost their role in this process which has been for a significant time taken over by architects, planners and decision makers. The study has attempted to identify areas of interests and to make them available to designers within an indigenous framework and cultural attitude shared by all people of the society.

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